Periodical
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AMERICAN BEE JOURNAL

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SEPTEMBER, 1928

WHY DOES HONEY SPOIL?
—F. W. FABIAN

THE WATER-FORMALIN TREATMENT
—DR. J. H. MERRILL

HONEY AND SPICE FOR SEPTEMBER
—BETTY BEE

A HONEY BOOSTER WHO BOOSTS
—NATT N. DODGE

Hicksville, Ohio, August 6, 1928.

The Fred W. Muth Company,
Cincinnati,

My Dear Sirs:

Of the five Ultra Violet treated queens you sent me, one was lost in introducing. They were introduced to five-frame nuclei--three frames of brood fairly well filled and two frames of honey. They began laying about July 1st. At present their hives are overflowing with bees.

July was a good month for gathering honey. I thought it was too late so we gave them comb honey supers (we produce comb honey almost exclusively) so we gave them full Langstroth frames of foundation as fast as they could use them. (We use dummies to fill unoccupied space). At this time they average about 9 frames of brood and honey, and about 8 frames of solid sheets of honey. The word "wonderful" does not overstate the work of these queens.

As to the gentleness of the bees we can not make a statement as many of the original bees remain. We are greatly interested in that phase of the case. We will want more next year.

Yours very truly,

(Signed) J. H. DIEBEL.

NOW IS THE TIME TO REQUEEN

GOLDEN OR THREE BANDED ITALIAN

Ultra Violet Treated		Untreated	
1	$1.50	1	$1.00
6	8.40	6	5.40
12	15.60	12	10.25

Satisfaction Guaranteed

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6,000 Mating nuclei in operation, so that we will be able to make prompt shipments. Should we be flooded we will advise you promptly when your order can be filled.

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Telegraph Office and Shipping Point, Mayhew, Miss.

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½-lb. Jars, 24 in Corrugated Paper Reshipping Case	$ .85 per case
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"CANCO" PLAIN FRICTION TOP PAILS AND CANS

2½-lb. Cans, 100 in Corrugated Paper Carton	$3.60 per carton
5-lb. Pails, 50 in Corrugated Paper Carton	3.15 per carton
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"CANCO" 60-LB. SQUARE OR FIVE GALLON CANS

Our 60-lb. cans are packed in strong wooden cases with cleated ends. This prevents splitting and insures safe delivery of your honey.

	1 to 9 cases	10 to 49 cases	50 cases or more
One 60-lb. Can in Wood Case	$ .65	$ .62	$ .60
Two 60-lb. Cans in Wood Case	1.10	1.00	.98

Above Prices Net F. O. B. Omaha, Nebraska

Write for our Complete Container Price List and Bee Supply Catalog

W. R. PERRY COMPANY

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LINE-BRED, THREE-BANDED, LEATHER-COLORED, ITALIANS

ARE NOW

50c each

There are no better queens reared. You cannot afford to miss this opportunity to requeen.
Can make immediate shipments.

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Designs that compel attention
Colors that blend and please
Wording that makes sales

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Send for catalog and samples

American Bee Journal, Hamilton, Illinois

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2½-lb. cans in cartons of 100	$4.00	car.
5-lb. pails in cartons of 50	3.50	"
10-lb. pails in cartons of 50	5.00	"
60-lb. tins, NEW, 2 tins per case	1.00	case
60-lb. tins, USED, 2 tins per case	.35	"
160-lb. kegs (the ideal container for both Buckwheat and Clover Honey)	1.20	each

GLASS JARS WITH GOLD LACQUERED CAPS

16-oz. Honey Capacity, 2 doz. per carton	$1.20	car.
3-lb. or Quart Capacity, 1 doz. per carton	.90	"

SPECIAL HAZEL-ATLAS TALL JARS

8-oz. Honey Capacity, 2 doz. per carton	$1.05	car.
16-oz. Honey Capacity, 2 doz. per carton	1.35	"
2-lb. Honey Capacity, 1 doz. per carton	.95	"

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COMB HONEY SUPERS—10-FRAME
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All queens of select quality. We kill the culls.

PRICES

Select Untested Queens	Select Tested Queens
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$45.00 a hundred	$90.00 a hundred

Queens wings clipped free of charge on request.

Letters just lately to hand: "Have kept bees for fifty years and tried many strains of bees, but find yours best of all."

"Have had your strain for fifteen years and they are fine. I never fail to get a crop of honey."

Our Strain Is the Best to Be Had—and Why?

Because for thirty-five years we have been selecting from the best and otherwise improving our Three-Banded Strain of Italian bees. The writer, M. C. Berry, has devoted his life from twelve years of age to the bees. Therefore, today we have a strain of Italians unexcelled for gentleness, disease resistance and honey production. Having several branches for honey production located in Nebraska, Iowa, Wisconsin, and Manitoba, Canada, gives us an excellent opportunity to test our strain personally. All queens that show marked wintering and honey production qualities, etc., we have returned to us for breeding purposes. No disease. Safe arrival guaranteed.

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P. O. Box 697 **Montgomery, Alabama**

Honey Containers

2½-lb. cans, per 100	$3.50
5-lb. pails, per 50	3.25
5-lb. pails, per 100	6.25
10-lb. pails, per 50	4.60
10-lb. pails, per 100	9.00
60-lb. cans, per case of two	1.10

All packed in Fibreboard cases, except 60-lb. cans which are in wood cases.

Comb Honey Shipping Cases

Single tier to hold 24 sections, with 2 in. glass and corrugated paper pads.

	10	50
For 4¼x4¼-1-⅞ in.	$3.90	$19.00
For 4¼x4¼-1½ in.	3.70	17.50
For 4 x5 -1-⅜ in.	3.70	17.50

Orders shipped same day as received

A. H. Rusch & Son Co.,

Reedsville, Wisconsin

Golden Queens

ARE NOW

50c each

These are extra high grade, and are excellent honey gatherers. You cannot afford not to requeen at this price

The Golden Apiaries

LETOHATCHIE, ALABAMA

Dadant's Plain Foundation

For the Man Who Wires His Own Frames

Dadant's Plain foundation is made only of the **purest beeswax**; refined without chemicals and retaining the sweet smell of the hive and honey that bees accept.

Comb foundation is made of sheets of wax pressed between metal mills, in exact reproduction of the base of bees' comb. The sheets are just right to fit the frames used in the hives.

There is absolutely no **substitute nor shoddy in it.** Each sheet is inspected and carefully wrapped to reach you in perfect condition, ready for use.

Dadant & Sons

WIRED — PLAIN — SURPLUS

Foundation Manufacturers

HAMILTON - ILLINOIS

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Our Cover Picture

Not a very good one of the subject. The original was a postcard of the queen-mating apiary of Gaetano Piana, Castel San Pietro, Italy. It is a beautiful yard, so well kept, nuclei far apart, and grass like a lawn. Piana queens are long established and among the best to be obtained from abroad.

HONEY CONTAINERS

2½-lb. cans, per reshipping case of 24	$1.05
2½-lb. cans per carton of 100	3.90
5-lb. pails, per reshipping case of 12	1.05
5-lb. pails, per carton of 50	3.20
5-lb. pails, per carton of 100	6.30
10-lb. pails, per reshipping case of 6	.80
10-lb. pails, per carton of 50	4.60
60-lb. square cans, in bulk, each	.35
60-lb. square cans, per case of 1 can	.60
60-lb. square cans, per case of 2 cans	1.05
24-oz. round glass jars, per case of 24	1.60
16-oz. round glass jars, per case of 24	1.25
6½-oz. tin-top tumblers, per case of 48	1.50

All above prices are F. O. B. Boyd, Wiscónsin

Prompt Shipment Guaranteed

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August Lotz Company
Boyd, Wisconsin

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Of Root "Quality" Goods

WHAT YOU WANT
WHEN YOU WANT IT

Write now for our new Container Circular

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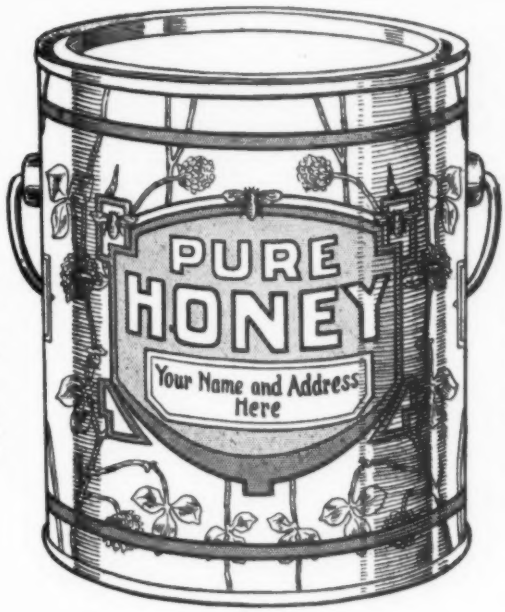
224 W. Huron Street, CHICAGO, ILL.

Honey Containers for Every Need

Lithographed Pails—Finest on Market

Two different styles. Style A is rustproof, enameled throughout, four colors. Style C, two colors, enameled outside only. Made 2½, 5 and 10 lb. sizes. Sample 5 lb. pail, any style, 25c postpaid. Name and address printed, (not stenciled), on orders of 100 or more.



Cost Little More than Plain Pails and Labels

In the long run it is economy to use lithographed pails and their advertising value alone cannot be overestimated. The housewife will use these beautiful pails over and over again, so they are a constant source of advertising for the bee-keeper. Since first introduced, these pails have proved popular in line with modern marketing.

New Reduced Prices

All f. o. b. Hamilton, Ohio, in lots of 100 or more of one size

Write for price on 500 or more of all styles priced.	Packed in dust-proof corrugated cartons	
	4 colors enameled throughout "A"	2 colors enameled outside only "C"
2½ lb. cans	$ 7.05 per 100	$ 6.25 per 100
5 lb. pails	11.60 " "	10.20 " "
10 lb. pails	15.60 " "	13.65 " "

PLAIN FRICTION TOP PAILS

Clean
Well Made
Well Packed

Carried on hand in carloads. Packed in dustproof cartons so they will reach you in good condition. In quantities of 1000 or more special prices can be made for shipment to you direct from factory.

PRICES f. o. b. Hamilton, Ill., or Keokuk, Iowa

	Mailing wt. 10 cans	10	50	100	wt. 100
2½ lb. cans	6 lbs.	$ .60		$3.60	31 lbs.
5 lb. pails	8 lbs.	1.00	$3.20	6.40	54 lbs.
10 lb. pails	12 lbs.	1.50	4.70	9.40	90 lbs.

GLASS JARS

Clear
Fluted
Pretty

Designed to make honey show up beautifully so it attracts attention on the grocers' shelves. On orders making 5000 pounds shipping weight or more we can make special prices for shipment direct from factory.

Prices

3½ oz. jars in cartons of 24 (wt. 7 lbs.)	$ .75
½ lb. jars in cartons of 24 (wt. 12 lbs.)	.85
1 lb. jars in cartons of 12 (wt. 12 lbs.)	.60
1 lb. jars in cartons of 24 (wt. 22 lbs.)	1.10
2 lb. jars in cartons of 12 (wt. 17 lbs.)	.80

For large quantities direct from factory, write for SPECIAL PRICES

Get our Complete Fall Price List including items below

Cases for sixty-pound Cans
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Comb Honey Shipping Cases
Comb Honey Cartons and Wrappers
Extracting Equipment

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You are within the Fourth Postal Zone of Lewis anywhere East of the Rocky Mountains

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Tin and Glass

In offering the lowest prices we have been able to make in years on glass and tin honey containers, we are offering the best quality. Also, you have a wider choice of sizes and assurance that we will do everything in our power to keep stock at our five warehouses ready for shipment on your orders.

Pails 5 lb. 12/c, 10 lb. 6/c and 5 gallon containers are in wood boxes, all other including all glass jars in heavy fibreboard cartons.

Very low prices on quantities CL or LCL. Write for free complete fall catalog.

TIN CONTAINERS—PLAIN—NOT LITHOGRAPHED

Cat. No.	Pack	Size	FOB Watertown	FOB Sioux City	FOB Lynchburg or Albany	FOB Texarkana
K 63—Cans	24/c	2½-lb.	$1.05	$1.10	$1.10	$1.20
K650—Cans	100/c	2½-lb.	3.50	3.60	3.65	3.80
K650—Pails	12/c	5-lb.	1.05	1.05	1.10	1.15
K 65—Pails	50/c	5-lb.	3.15	3.20	3.25	3.35
K 66—Pails	6/c	10-lb.	.80	.85	.85	.90
K 69—Pails	50/c	10-lb.	4.55	4.70	4.80	5.05
K624—Cans	1/c	5-gal.	.60	.65	.65	.70
10 Cans	1/c	5-gal.	5.70	6.00	6.00	6.50
K626—Cans	2/c	5-gal.	1.05	1.10	1.10	1.15
20 Cans	2/c	5-gal.	10.00	10.50	10.50	11.00

HART FLUTED GLASS JARS F. O. B. OUR WAREHOUSES

K648—3½-oz. glass jars, cartons of 24, weight 7 lbs., 24 for ..... $ .75
K632—½-lb. glass jars, cartons of 24, weight 12 lbs., 24 for ..... .85
K631—1-lb. glass jars, cartons of 24, weight 22 lbs., 24 for 1.10
K630—2-lb. glass jars, cartons of 12, weight 17 lbs., 12 for ..... .80

LITHOGRAPHED TIN CONTAINERS F. O. B. HAMILTON, OHIO

	4-color design	2-color design	Canco design
K646—2½-lb. Cans	100 @ $ 7.05	100 @ $ 6.25	100 @ $ 7.55
K645—5-lb Pails	100 @ 11.60	100 @ 10.20	100 @ 12.35
K644—10-lb. Pails	100 @ 15.60	100 @ 13.65	100 @ 16.45

If you are in the market for more than $100 worth of containers be sure and get our special quotations on this quantity before buying elsewhere.

HONESTLY MADE—HONESTLY SOLD—HONESTLY PRICED

LEWIS BEEWARE
STANDARD OF THE BEEKEEPING WORLD

G. B. LEWIS COMPANY
Established 1874
HOME OFFICE AND WORKS WATERTOWN, WISCONSIN

BRANCHES — ALBANY, NEW YORK LYNCHBURG, VIRGINIA TEXARKANA, ARKANSAS SIOUX CITY, IOWA

AMERICAN BEE JOURNAL

Vol. LXVIII—No. 9 Hamilton, Illinois, September, 1928 Monthly, $1.00 a Year

Why Does Honey Spoil?

By F. W. Fabian, Research Associate,
Department of Bacteriology, Michigan Agricultural Experiment Station, East Lansing, Michigan

IT seems that every industry has its "ups" and "downs," its "summers" and its "winters." In the dairy industry the dairyman is continually confronted with disease in his animals, as tuberculosis, infectious abortion, mastitis, etc., which is a menace to the industry and causes great economic loss. After the milk is produced great care must be exercised or it will spoil before it is sold.

The horticulturist likewise has his enemies to fight in the form of insect pests and must spray from early spring to middle summer if he would save the crop from them. After it is harvested he then suffers a certain amount of loss of his fruit through spoilage. Every manufacturer has his junk heap, where would-be profits are piled.

The apiarist likewise suffers losses from disease in the bee larvæ, from American and European foulbrood, caused by bacteria; and other diseases as Nosema, ravage the adult bees; but the most unkind cut of all is that the honey should spoil after it is harvested and ready to sell. Honey represents the finished product, the sum total of the labor of bee and man, and is practically the same as money.

> As Mr. Fabian so well says, of all the losses the beekeeper suffers, "the most unkind cut of all is that the honey should spoil after it is harvested and ready to sell." It happened with ten barrels of our 1927 fall honey.
>
> It is good to know what causes the trouble and why heating stops the fermentation.
>
> A similar study of yeasts has been made by George E. Marvin, of the University of Wisconsin. On page 345 of the July number, attention is called to the publication of his results in Volume 21 of the Journal of Economic Entomology.

History of Fermented Honey

Boutroux, a Frenchman, as early as 1884 called attention to the fact that the nectar of flowers might have yeasts present, but this was mere speculation and it was not until some years later before his speculations were investigated by Hilkenbach, a German, who in 1911 made a study of the yeasts found in nectar and their dissemination in nature. A little later, in 1912, Reukauf observed a cross-form yeast in nectar and advanced a theory that every kind of plant harbored a different kind of fungus. Schuster and Ulehla disproved this theory in 1913. They showed that a great variety of flowers, at least ten different genera, harbored the same yeast.

Gruss in 1917 next investigated just how the yeasts might be transferred or transmitted to the nectar of the flower. He showed the adaptability of the proboscis of the bee to the structure of the flower and showed that the same yeasts were present in both the papillary of the blossoms containing nectar and in the proboscis of the honey and bumble bee. It was also found in the fore and honey stomach of the bee. He was of the opinion that the yeast was laid in by the bees with the honey and larva food in the covered honeycomb.

Schoellerhorn, a Frenchman, in 1919 made a very extended study of the distribution of yeasts in flowers, and his observations are both interesting and instructive. He found that the nectar of greenhouse plants, as a result of the absence of insect visits, was sterile; flowers where the nectar was inaccessible, as in narcissus, was likewise sterile; Alpine flowers were less infected than the flowers of the lower plain regions; closed flowers contained sterile nectar; yeasts spread by dusts were different from those spread by bees. One of his most interesting observations was that the same yeast is found in the nectar of flowers of the same species collected in different spots at the same period, and are found the next year at the same period in the flowers of the same plants.

Microorganisms Found in Honey and Bees

Richter isolated a yeast which he found in honey undergoing alcoholic fermentation. Klocker recovered a species of yeast from the body of bees. P. Bruce White studied the alimentary tract of some twelve hundred bees and observed smears of the intestinal contents of a great many more, and found four main types of bacteria, but said nothing about finding yeasts. G. F. White isolated three yeasts from diseased brood. It will be seen that there is not much information concerning the microbial flora of bees and honey.

Strange Theories Concerning Microorganisms in Honey

Before much was known concerning the microorganisms and their significance in nectar and honey several theories were advanced to explain their probable use. One of the suggestions was that the microorganisms inverted the nectar. Another was that it was the microorganisms present in nectar and honey that were responsible for some of the diseases of bees. However, we now know the causative organism of some of the diseases of bees and it is not any of those commonly found in nectar or honey.

What Causes Honey to Spoil?

Spoiled honey is not uncommon. In some years there seems to be more

honey spoil than in others. In years when there is a great deal of rain it is a general observation amongst beekeepers that more honey spoils than in a dry year. It is also common knowledge that unripe honey usually spoils unless it is concentrated or heated to a temperature sufficiently high to kill the microorganisms present. The above are common observations and general knowledge to most beekeepers.

Now just what causes the honey to spoil is not generally known. A study of the cause has been under investigation at the Michigan Agricultural Experiment Station by the author and a co-worker, Ramon Quinet, for the past several years, and the detailed results are now available in Technical Bulletin 92. In this work, samples of fermented honey were submitted for analysis from many parts of the United States and Canada. All of the samples submitted were analyzed for moisture content and microorganisms. The moisture content of a majority of the samples was found to be greater than 21 per cent, although several of the samples tested showed a moisture content as low as 17 per cent. Various experiments were carried out with sterile honey inoculated with yeasts obtained from spoiled honey, and it was found that as soon as the moisture content of the honey reached 21 per cent or more, fermentation started.

Extracted honey was placed in a moist atmosphere and it was found that it absorbed water. The amount of water absorbed in some cases was as much as 33 per cent. Comb honey, on the other hand, absorbed moisture very slowly, the greatest increase noted being 5.68 per cent. Comb honey when placed in a dry atmosphere likewise lost moisture very slowly. One experiment carried on over a period of seven years showed that the amount of moisture lost during this time was only 7.77 per cent. As a result of the above experiment the conclusion was reached that there is a very intimate relationship between the moisture content of extracted honey and its fermentation or spoilage.

A Theory Regarding the Spoilage of Honey

A bacteriological analysis of many samples of fermented and unfermented honey showed that practically all samples contained yeasts and that, when sufficient moisture was present, these yeasts were capable of fermenting the honey. From these observations it is believed that when unripe honey is extracted and placed in storage, or that when honey is stored in damp places, enough moisture will collect on the surface sufficiently to dilute the top layers of the honey to a degree suitable for the growth of the yeasts present, and as a result they grow and cause fermentation or spoilage. Honey should, therefore, be stored in a cool, dry place and closely observed for spoilage. It is easy to detect containers that are undergoing fermentation by the appearance of the container. The yeasts in growing convert a part of the sugar into alcohol and carbon dioxide. It is the carbon dioxide which is given off in the form of a gas which causes the cans or containers to swell, and they are readily detected by their appearance. The amount of alcohol produced ranged from 3.63 to 6.9 per cent by volume.

Nature of Microorganisms Found in Honey

The nature of the material causing the fermentation was found to be little plants invisible to the naked eye, but readily detected by proper bacteriological methods. By means of the proper food these plants may be grown by a bacteriologist in a bacteriological garden much the same as a florist would grow flowers in a greenhouse. By the aid of a microscope these plants, called yeasts, may be studied and properly classified in the plant kingdom. Twenty-five yeasts were isolated from honey and classified. It was found that they could be grouped into two different genera and five different species.

How to Prevent Honey From Spoiling

Experiments were conducted to ascertain the degree of heat necessary to kill or prevent the growth of these yeasts in honey. It was found that, by heating honey containing yeasts to a temperature of 145° F. for thirty minutes, no spoilage occurred. If there is any doubt in the beekeepers' mind as to whether honey will keep or not, this would be a safe practice to follow. Heat is the best method to use to prevent spoilage, since the pure food laws prohibit the use of any chemicals for food preservation except benzoic acid or benzoate of soda. Only well-ripened honey should be placed in storage. Unripe honey should be evaporated until the excess water is removed before being stored. It should be heated then to a temperature of 145° F. for thirty minutes. This will help to evaporate the excess moisture and also kill the yeasts present.

To sum up the information which is now available concerning fermented honey, it may be said that minute plants, technically known as yeasts, are found in both unfermented and fermented honey. These yeasts when isolated and placed in sterile honey are capable of fermenting it. Honey when placed in a moist atmosphere absorbs water. It may absorb sufficient water to cause fermentation if the proper yeasts are present. Honey should, therefore, be stored in a cool, dry place. Unripe honey is more apt to ferment than properly ripened honey. For this reason the excess moisture should be evaporated before it is placed in storage or sold. Spoilage in honey may be prevented by heating it to a temperature of 145° F. for a period of thirty minutes.

Tasty Educational Exhibit in Colorado

"Eat More Honey." In these days of "eat more" everything, it may be like following the crowd to say the same of honey. That is about the only thing we can criticize in the display pictured above, put up by the Colorado Honey Producers' Association. The exhibitor here took ready-made honey and formed his words. Some exhibitors make the bees do the "writing." Looks like the designs at the top of the display, in this case, were made in this way by the bees.

Spreading American Foulbrood

By F. Eric Millen

WE have often wondered how much danger the beekeeper exposes his apiary to when feeding combs of honey from colonies infected with American foulbrood.

Last September we had occasion to inspect an apiary in Grey county where American foulbrood was quite prevalent and a number of colonies were destroyed. The queens were kept in the single brood chamber and an excluder was on the brood chamber. In the supers full sheets of comb foundation had been used and these were fully drawn to the bottom bar and every cell sealed with the finest appearing white honey possible to secure.

Before destroying the contents of colonies and supers, I selected ten of the nicest combs of honey, and these were placed in a super and brought to the Department. They were stored in a warm bee-tight room until May 8, this year. On this date we received ten two-pound packages of bees from a southern shipper who has no American foulbrood in his vicinity. To these ten packages of bees we supplied three full sheets of foundation and one comb of white honey from the supers of the colonies infected with American foulbrood. With the exception of the comb honey, all equipment was new.

All queens were safely introduced but one, which was immediately replaced and accepted. May 22, all packages were examined and no trace of American foulbrood found. June 11, packages were given a second inspection and three were found to be infected with American foulbrood. These were destroyed with cyannogas. June 25, the remaining packages were again inspected, when four more packages were found infected and destroyed. July 7, the remaining three packages were inspected and all three found infected and destroyed.

Thus the entire number of packages developed American foulbrood from the newly drawn combs of honey in which no brood had ever been reared.

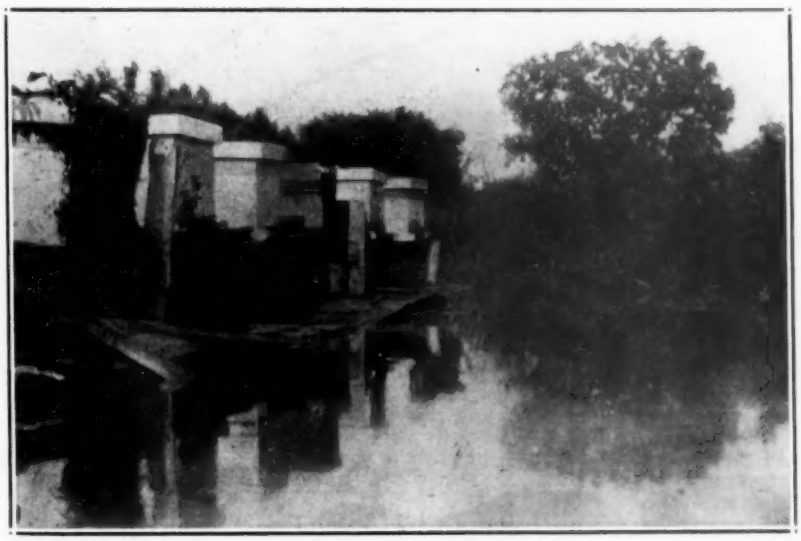
The experiment seems to prove that some of the honey in the super combs must have been deposited in the brood chamber first and later moved into the super combs; or the possibility of bees carrying American foulbrood infection from the brood chamber into the honey placed in the super combs. Whichever is correct, the experiment shows the extreme care which is necessary on the part of the beekeeper if American foulbrood is to be eliminated from the apiary.

There is one other phase of apiary inspection for American foulbrood which is giving us serious food for thought. That is the possibility of the ground in front of American foulbrood infected colonies becoming infected and later developing in new colonies placed on the old stands. We have almost come to the conclusion that it would be safest to burn over the ground in front of and around all colonies which have developed American foulbrood.

We shall be glad to hear from other apiary inspectors whether they have noticed this latter condition in their apiary inspection experience.

Canada.

Illinois Has Flood Water, Too



I am sending you a snapshot of my bees on stilts. I waded in water three and one-half feet deep all day of the twelfth (July) to save my bees, and lost two swarms that I had to let stay on the ground. This swarm that you see on the front of the hive came out of one hive and settled on this hive and stayed right there. The queen must have fallen into the water. I was standing in the water above my waist when they came out. I don't see why they did not go to the same hive they came from. The bees don't seem to be doing very much this year so far. Louis O. Prescott, Milan, Illinois.

Interesting Summary of Bee Courses Offered in American Colleges

In a bulletin put out by the Kansas State Agricultural College, January 1, 1928, under the title "The Courses in Entomology Offered in American Colleges," by Dr. Roger C. Smith, mention is made of those schools which offer courses in beekeeping.

We summarize as follows:

Twenty-nine different schools offer a beginner's course in beekeeping, four offer a complete course in apiary management, eight offer work in advanced apiculture.

Some of those named are a course in Bee Culture at the Alabama Polytechnic Institute and at the Idaho University; commercial beekeeping at Oregon State College and at North Dakota Agricultural College; apiary management at the University of Illinois, fall management and honey plants at the Louisiana University.

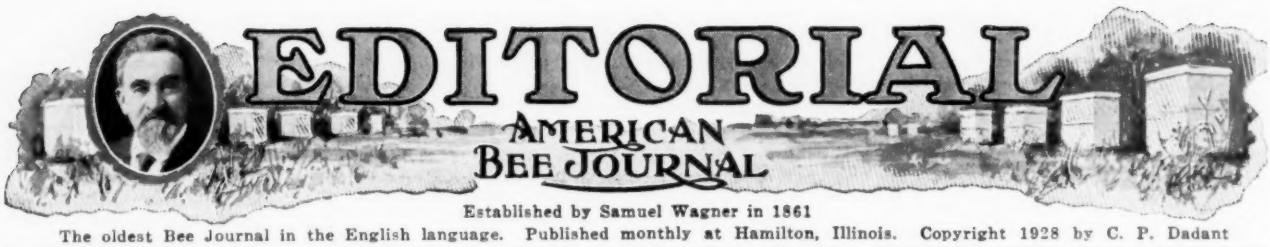
Probably the most complete work is that offered by the Iowa State College, which includes spring management, fall management, honey production, wintering, queen-rearing, bee anatomy; honey, its uses and marketing; advanced apiculture, and a regular seminar in apiculture for the more advanced students.

Cornell University under Dr. Phillips has equally well developed courses, but they are not so specifically mentioned in this resume.

Revision of Phillip's Beekeeping Book

We have received from the Macmillan Company, publishers of Dr. E. F. Phillips' "Beekeeping," a copy of the new revision of this important textbook. It contains many additions and improvements and extensive rearrangement which enhance its value considerably.

Dr. Phillips is to be complimented on the splendid way in which he has handled the subject. Since the publication of the first edition, "Beekeeping" has found its way into most of the schools where beekeeping is taught and into the homes of hundreds of beekeepers, who value it highly.



Established by Samuel Wagner in 1861

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On the Salivary Glands

We are in receipt of a bulletin in the French language, by Prof. E. Bugnion, of Aix-en-Provence, on the salivary glands of the honeybee and of the apidæ in general.

Those of our readers who have studied the textbooks on beekeeping know that there has long been a difference of opinion among the students of bee anatomy as to the production of what has been commonly called "royal jelly," the pap supplied by the bees to the larvæ during the first three days of their life and to the larvæ of the queens till they are full grown, and probably afterwards. Some scientists, following Schonfeld, Cowan, Cook and others, have held that this pap is produced by the digesting stomach of the bee and regurgitated through the honey sac. Others, like Schiemenz, Cheshire, Zander and others, hold that it is the product of one of the salivary glands, gland No. 1, located in the head of the worker.

Mr. Bugnion brings proof that the latter is correct. In his bulletin of sixty-four pages he describes the salivary glands, not only of the honeybee, but also of a number of other apidæ, with twenty-nine engravings. We cannot go into details, for the work is very scientific, but we want to urge those of our readers who are fond of microscopy and anatomical studies to secure the bulletin in question, which they will find interesting and enlightening. It may be had at the cost of 15 francs (about 60 cents) from the Library of Vulgarisation Apicole, at Montfavet, Vaucluse, France. The title of the bulletin is: Les Glandes Salivaires de l'Abeille et des Apiaires en General.

The Drones. Why Do Bees Kill Them?

There is quite a tendency among beekeepers to support the large rearing of drones by bees. Many people think that we should leave in the hives all the drone-comb that the bees build.

Yet, there is a large difference in the number of drone-cells that hives contain. If a swarm has a young and prolific queen, it will build but little drone-comb, for the young queen prefers to lay in worker-cells and she appears to make the bees understand what she wants. But if the queen is old and not very prolific, the bees will soon have worker-cells enough to keep her busy and they will then make a lot of drone-combs.

Have you ever seen drones, reared early in the season, killed by the bees before they had any opportunity of showing their possible usefulness? If the spring is early and the colony rich in stores, with plenty of drone-combs, many drones will be bred. But if a change in the weather comes before the harvest and the temperature goes down, the bees will often kill the drones mercilessly. They evidently realize that the poor fellows are unfit for gathering nectar. They do not sting them, but persecute them, climbing on their backs as if they wanted to sting them. Thus they drive them into a corner, sometimes on the outside of the entrance. This happens also when the crop is at end. But if they are queenless, they not only allow their drones to live, but even accept drones from other colonies. In fact, I believe that they pay but little attention to whether the drones are from their own hive; they welcome them when there is a crop and drive them out when there is none.

But the reason why bees allow the drones to live when they are queenless does not seem very rational. They evidently connect their utility with the mating of the queen, but when they are hopelessly queenless the drones are of no use to them. It is a freak in the natural history of bees.

We have been in the habit of replacing drone-combs with worker-combs in our colonies, at all seasons when it is possible to do so. We believe that this is one of our most successful features of management, for we can thus rear drones in the colonies from which we wish to breed and prevent their rearing, except in very reduced numbers, in the colonies from which we do not wish to get reproducers. We believe that a comb full of drones will require almost as much honey as that comb would hold, to breed those drones and keep them during their entire life. We should remember that drones do not even gather what nectar they need to sustain their life. They go out to take a pleasure flight and come home to eat. A beekeeper, to be successful, should have control of the breeding of drones in his apiary.

Honey, Ripe and Unripe

We rarely see honey so irregular in ripeness as it has been this summer. We believe that, in our case, the trouble was due to the numerous rains that we have had and to the irregularity of the crop. Fresh honey often drops from the cells as if it were so much water. In such cases the supers may be filled enough to lead us to believe that there is a good crop. The next visit, after a few days of heat and drouth, shows us only a part of the super filled. The bees, in evaporating the nectar, have brought it together and sealed it, and the result is an appearance of not much over half the supposed crop of a few days before.

Some people try to establish a precentage of moisture in nectar and will tell you perhaps that it contains 80 per cent of water. But the fact is that nectar may be of very great difference in density, according to the blossoms from which it is gathered, the moisture in the air and the moisture in the ground. Quite often, after a harvest of very thin nectar, the bees harvest nectar which is so thick that it can be extracted with difficulty. This is the case, in some seasons, with heather honey. The old editor of L'Apiculteur, Hamet, who died in the harness after publishing that magazine nearly forty years, was delighted to learn that it was difficult to extract some of the heather honey of southern France, for he had said and repeated that the honey extractor was a "useless toy," and this fact seemed to justify the anathema. Luckily, there is very little honey produced that cannot be thrown out of the combs with a good honey extractor.

The Hive and Honey Bee In Italian

The latest edition of "The Honeybee," of Langstroth and Dadant, is now printed in the Italian language, by D. Angeleri, of Turin. The book contains a number of Italian engravings, which make it more attractive to Italian readers.

This work is now published in five languages: English, French, Spanish, Russian and Italian, but more translations are likely to be produced soon. The Italian edition may be obtained here, at the same price as the English.

Comb Spacing Versus Swarming

We have received a long letter from a beekeeper mentioning the fact that his colonies all swarmed plentifully, except one. This one yielded a large amount of honey, but did not swarm. The only difference between that colony and the others was that, although it was, like the others, in a ten-frame Langstroth hive, it contained but nine combs, while all the others contained the regular number of ten combs.

The explanation of this fact is easy. The colonies on ten combs had but the regulation 1⅜ inches space from center to center for each comb, while the other colony, with its nine combs, had a trifle over 1½ inches for each comb, allowing a greater space for ventilation.

The space of one-eighth inch additional for each comb looks small, but if we were, like the bees, confined within walls allowing so little space for breathing and air circulation, we would probably appreciate the difference. Bees will work just as well in a hive the combs of which are 1½ inches apart from center to center as in one that has its combs only 1⅜ inches apart.

We have ofen mentioned this difference as a matter of some importance. Dzierzon and Berlepsch, both men of great ability, disagreed on this matter, the one using the smaller spacing, the other the greater. This caused Langstroth and Quinby to use different measurements, the latter using the greater space. We followed him, both in the size of frames and in the greater spacing. Every now and then we come across some beekeeper who has the same experience as the man cited above, using, accidentally, only nine frames in a ten-frame hive. It does not always follow that there is so great a difference in the amount of swarming, but it is, in our opinion, one of the reasons why, with our system, there is less swarming than is commonly the case.

The present summer, with its sudden changes from cool to hot, has exemplified the irregularities and excesses of swarming more than usual. For this reason I wish to repeat the requirements to avoid excessive swarming. They are as follows:

1. As a matter of course, plenty of room is needed, both for the egg laying of the queen and for the storage of honey. The bees must not be allowed to feel that they are crowded for storage or breeding room.
2. The queen must be young, not over two years old. If she is old, she may slack up on her egg-laying and the bees may feel that they will have to supersede her. Of course they will rear queen-cells and then the old queen will consider that she is being invited to leave. That is why a colony with a young queen rarely swarms.
3. There must be plenty of opportunity for ventilation. This is where our comb spacing proves useful. But there must also be opportunity for forcing air through three or four or more stories, without too much difficulty. That is why we object to queen excluders, separators, fences, etc., all obstacles to easy ventilation.
4. There must be shade. If the hive is in the hot sun, the temperature may rise, in spite of the ventilating activity of the bees, to an unpleasant and dangerous degree.
5. There must be a minimum of drones, for they are in the way of the bees and help to raise the temperature out of reason.

We will not promise you that there will be NO SWARMING if you follow the above directions, but there will be a minimum.

It is rather late in the season to insist on this matter, but it is a good idea to insist on it while most of our readers have just had some more or less pleasant experience with swarming.

Illinois Beekeepers' Tour

On another page in this magazine appears an article by V. G. Milum, giving report of the four-day field trip through central Illinois from August 1 to August 4.

The writer had the pleasure of being along on this trip and believes that a few editorial notes concerning some high points of the same may not be amiss.

In the first place, highest credit is due Mr. Milum for the efficient way in which he handled the itinerary of the trip. Meetings were carried out on time, owing to the very careful itinerary. Programs were so planned as to appeal to the beginner as well as veteran, and publicity was such that there was a desirable attendance everywhere.

The interest in beekeeping is undoubtedly on the increase. This was especially noticeable in our trip into Montgomery county, Illinois. In conversation there with County Agent, Mr. Synder, he advised us that six years ago there were only two fields of sweet clover in his county. Now there are from eight thousand to ten thousand acres each year. This gives an idea of the amount of liming that is being done by the farmers, the amount of interest manifest in this new legume and the wonderful future possibilities for beekeeping as a result. Older beekeepers are finding the possibility of an almost continuous crop throughout the summer, and younger beekeepers are starting on a modern and efficient basis.

If Montgomery county is any criterion of what is going to happen as sweet clover rapidly spreads southward, the western sweet clover sections may well look to their laurels, even though they have climatic conditions which are probably more desirable from the standpoint of nectar secretion.

The writer got special enjoyment from the trip from the fact that he got more intimately acquainted with the fifteen or more beekeepers who went through the entire four days and that he also became personally acquainted with many beekeepers whose names have been familiar for years.

Judging from the present field trip, such tours are a success, and the great enthusiasm of those attending, the indefatigable energy of the persons in charge, and the wonderful hospitality of the beekeepers on the route, in no small measure are responsible. M. G. D.

Food For Strong Teeth

The National Dairy Council is doing a magnificent thing in building a stronger, finer race of children. The nutrition experts of this great organization recognize the fact that strong teeth are an important asset in health, and that the character of the teeth depends very largely upon the kind of food the child receives. In a recent bulletin the National Dairy Council offers mothers everywhere some simple rules for building strong teeth. The requirements are: A quart of milk a day, with leafy vegetables and fruit, cereals, hard or toasted bread, plenty of butter, an adequate amount of meat, fish and eggs, and then natural sugars to satisfy the sweet tooth every child has. Among the natural sugars, honey occupies an important place. And a jar of honey figures conspicuously in the Food for Health poster of the National Dairy Council.

Bees and Spray Poison Again

Prof. V. G. Milum of the University of Illinois informs the writer that the editorial in the May issue of this Journal and the article on page 302 of the June issue do not correctly state his position on the question of the poisoning of bees by spray. It appears that it was his intention merely to report the death of bees from unexplained causes and he did not mean to convey the impression that he doubted that serious injury was thus caused at times. The title to the article in question was added after it left his hands and did not properly express the impression which he wished to convey.

We hope that those who are interested in the question of the death of bees through the spraying of fruit trees will read again Mr. Milum's article in the April issue with this explanation in mind. F. C. P.

Four Hundred at a County Meeting

J. C. Dods, in the Beekeepers' Item for July, reports that 400 beekeepers were present at the Jasper County meeting. Hurrah for Missouri beekeepers! They like to be shown and so they attend meetings. Correct. Why can't we all do the same in every State?

Reports Wanted of Results with Formalin-Vapor

CONSIDERABLE correspondence has been created as a result of the publication in our August number of the use of formalin-vapor in sterilizing foulbrood combs. It was realized when the article was prepared that the information could not be made complete, because the use of formalin for this purpose is still largely in the process of experiment. Consequently much detail was left out which would immediately bring questions from those who are interested in the method.

The purpose of most of our correspondents has been to find out more about the use of formalin and the time of treatment. There are probably others who would like to ask similar questions. Here they are, with their answers:

1. "I am much interested in the treatment of foulbrood. I have always taken pains to shake all colonies, yet the disease continues to spread in various ways, mainly, I think, through extracting combs and supers and by transferring combs from one colony to another.

"My present plans are now to treat every diseased colony by the new method. This fall, after brood rearing is over, and all supers removed, I shall cage the queens, remove all frames from the hive, starve the bees for two days in their empty hives to get them to use up all the honey in their stomachs, then give them a lot of new combs that have been treated, and feed sugar syrup. Release the queens in a day or two. What is your opinion about this?"

Answer: We cannot give you much advice on your plan to starve the bees and then release them on treated combs. It really is the double shake, previously used, only the bees are supplied with drawn combs after the second shake instead of foundation. I believe it will work.

2. "In the article in the August issue, nothing is said as to the proportion of alcohol and formalin used, nor the length of time of treatment. The strength of the solution and the length of time for vaporizing are the determining factors of success.

"As I understand it, the combs were put in a gas-tight container, the solution vaporized with heat and driven into this container. How long are combs left in the container, and why is it necessary to dilute the formalin with alcohol?"

Answer: A pint of alcohol-formalin was used to four hive bodies and the combs were left in the tank a week. No one has worked out a minimum amount of formalin, nor a minimum amount of time. To do this will require experimentation. The recommendations given in the article are believed to be large enough to insure safety.

Yes, we used a tight box, of wood in our case, thoroughly painted to close up all the cracks, and with a rubber edge over which a telescoping cover fitted. Let me caution you, however, that if you use a metal container and vaporize the formalin into it, the metal will accumulate the heat carried in by the vapor enough to cause some of the combs to melt. It is much better to use a wooden box which is made gas tight.

Formalin is not diluted in alcohol or water. They are simply carrying liquids. Formalin is a gas dissolved in the liquid, from which it is easily driven off as a vapor. It may be bought from the drug store in alcohol or in water. Either one is apparently satisfactory.

3. "I suppose the treating is done in summer temperature. What about treating in the fall when it is cool, or in winter? When freezing weather comes, will it hurt the formalin other than retard its evaporation?"

Answer: I do not think the temperature of the atmosphere will make much difference when the formalin-vapor is obtained by heating. Where a stove is used conditions are under your control

It would make a difference in the length of treatment when using the Jay Smith method. When it is cold, it will be necessary to leave the solution in the container or in the stacks a much longer time before it will vaporize.

4. "In treating European foulbrood after caging the queen, is it safe to release her on the same combs or use new ones? Also does formalin-vapor clean up this disease?"

Answer: In treating European foulbrood, instead of releasing the old queens it is usually better to introduce young queens on the same set of combs, at the end of the two weeks. Formalin-vapor is not needed in the treatment of this disease.

5. "At what point in the tank holding the combs is the vapor put in?"

Answer: This is arbitrary. In our wooden tank it was about a third of the way up, as this was the place most convenient for our vaporizing outfit.

These questions are taken from letters from men who are anxious to use the vapor immediately on combs which they have saved for treatment. They indicate that there is considerable interest in the subject.

We ask those who try the method to consider their efforts as experimental and to let us know when they have definite additions to make to the technique. We will be glad to publish anything which will contribute information.

Stepladder Honey at Aberdeen

L. A. Syverud, of Aberdeen, South Dakota, is well known as a trustworthy beekeeper and respected citizen. It's best to say this at the start of telling about the stacked hives above. We have Syverud's own word for it. It is his James River yard, in 1926. east of Aberdeen. From the marked hive he removed five ten-frame bodies and left the sixth one for winter over a Jumbo brood chamber.

Old Bees For Nurses

By Jay Smith

I see that E. M. Cole still keeps taking shots at me about the age of nurse bees. When we met in Iowa a few years ago we had a real fight over the odor of queens. We did not use swords or machine guns, but confined ourselves entirely to gas attacks. So now, as he has started it again, if someone will hold my coat I will see what I can do to him. He says that bees one or two days old have not been regarded as nurse bees, but that young bees are nurse bees. Well, just how old is a young bee anyhow? If you can manage to stretch the point and make it five or six days old before it can nurse, I am willing to shake hands and call the fight off.

I do not know just where I read it, but several have stated that as soon as a bee emerged it began to feed the young larvae. I cannot believe this is true. The queen matures in about a week. The drone probably longer, as drone brood is usually reared before queen brood. The worker may do a little work at a week old and in case of emergency a little younger, but my experience in rearing thousands of queens and in forming hundreds of cell-building colonies leads me to believe a bee does not become a good nurse till about two weeks old. Page 285 of the American Bee Journal is an editorial mentioning a German scientist who states that a bee must be from twelve to sixteen days old before it can build comb. This is about as I would expect, for it takes about two weeks for a bee to be at its best and at that age it can nurse, build comb, gather nectar and pollen, and if the circumstances warrant, it can sting. While a bee under two weeks can nurse, it is far from being a good nurse, and any bee I ever had anything to do with is a failure at building queen cells till it is over a week old. But that old bees can be good nurses when the necessity arises cannot be denied, for after going through a six months' winter, when no brood is reared, they can nurse the brood equal to any younger bee.

Mr. Cole mentions the fact that Mr. Dadant removed a colony and gave the returning bees a frame of brood from which they failed to rear any queen cells. I have had this same thing happen. Upon one or two occasions I have had broodless colonies refuse to nurse the eggs laid by a newly introduced queen and as a result would not hatch. But in either of the above cases I do not lay it to the age of the bees, for there are other features that prevent bees from nursing besides age. A bee in order to be a nurse must prepare for it several days in advance and in doing so it must eat honey or syrup and an abundance of pollen. Pollen is of more importance than honey for in the pollen is the tissue-forming material which is lacking in honey. A bee that is gathering honey and no pollen cannot immediately change from a fielder and become a nurse, or at least a good nurse. They probably have some royal jelly that they can use for nursing a little brood but not enough for rearing queens. In the case of those returning bees, they had all they could do to nurse the worker larvae and not enough to nurse queen larvae. In the case of laying workers the workers are very poor nurses and most of the larvae die. In such cases they devote their main energy to laying eggs and cannot both lay eggs and nurse. Again in the case of the returning bees it could not have been the age, for many bees ten days old will return to their old location and such bees cannot be called old. Anyway, Mr. Cole, I agree with you when you say young bees will do better nursing when they have old bees to help them. Indiana.

Indiana Students Get Acquainted

Students at Perdue University, Lafayette, Indiana, not only get blackboard and textbook facts about bees; they go right after apiary practice. Above they are packing bees for winter in the University apiary. Usually there is quite a gulf between theory and practice, but teaching like this helps overcome the difference.

More Honey for Bakers

George Ament, editor of the American Independent Baker, loves honey and wants more of it used in bakery goods. In a recent article he links long life and the honey habit in the following interesting fashion:

"Dr. Serge Voronoff, of Paris, has issued a statement which has been published far and wide, that it is easily possible for the human race to extend its period of life to one hundred and twenty years. His statement goes on to say that the first requisites are the giving up of white sugar, white flour and salt in the diet.

"White flour fanatics we have had in our midst for many years, and it won't be long before we have hundreds preaching and writing about white sugar. But their propaganda can be readily overcome by reverting to the first known sweetener, honey. Honey, too, has a better flavor than any other sweetening agency known, and for that reason alone recommends itself."

When bakers revert to honey, the first sweetener, as Editor Ament suggests, there will be no need for stimulating a foreign market for our surplus honey. We shall need it all for honey cakes and jumbles. Perhaps then children will not be denied their cake and cookies, which, when sweetened with honey, are splendid energy foods.

Normal Crop in Cache County

The harvest of the honey crop in Cache county, Utah, has begun, and according to E. J. Palmer, local beekeeper, the crop throughout the county will be normal this season, although the bees were late in beginning their work, owing to the backward spring. However, honeyflow is exceptionally good. G. P.

Honey and Spice for September Canning

By Betty Bee

THIS corn-syrup bill has interested me immensely; and the splendid way our bee men went after it increased my respect for the beekeeping fraternity. It all goes to show what a fine bunch of men they are and what they can do when they set their minds on a thing and all pull together. Now if all of them could only get it into their heads throughout the country to pull together in that same united, determined, you-can't-stop-us way to put over the systematic advertisement and sale of honey, the honey business would be put on a thoroughly efficient and profitable basis and we could all get ready to "sit pretty" and forget our financial troubles, and spend our time on studying how to produce more and better honey, instead of worrying as we now do on how to get rid of what we produce. After studying up a bit on that corn-syrup bill and hearing my John and our visiting beekeepers discuss it, I am more than ever convinced of the importance of the enforcement of our splendid pure food laws **as they stand**, without any "fixin's or fillin's" to take out their force.

Not long ago some interesting cross-country tourists drove up for honey. Since John was in town it fell to me to get it for them and to answer their questions. The man proved to be a professor from one of our eastern colleges, and the talk came around to "honey" and the pure food laws, which led to the subject of adulteration generally. It happened he had just finished reading an exhaustive treatise by an eminent German scientist in which the author cited case after case where a manufactured product contained absolutely the same food elements that the real food possessed. Now it may not have been seemly for a back-country beekeeper-in-law to talk back to a down-east college professor or dare dispute the work of an eminent scientist; but I have never been one easily daunted by high-browed dignitaries, and I took the stand that, no matter how perfect in taste, quality, odor or appearance any substitute or manufactured food may be, there is a life, a spark of the Infinite in a REAL FOOD fresh from the garden or orchard that cannot be copied; just as a synthetic diamond may be made of the same materials, by the same process, but will always lack a "something," a light, a life of the real diamond.

Since my visitor grew quite eloquent in defense of this synthetic food proposition, and as I thought of our little Jerseys in the down-pasture I mildly suggested that story of Henry Ford's manufacture of a mechanical cow whose synthetic milk would be of such high quality as to make all honest cows turn green with envy might perhaps appeal to him. Personally, I preferred to feed my children on Jersey milk.

Not long after, we took a little run over to Cousin Jim's and in the course of our visit enjoyed a tour of the one big factory of their little town, a cannery. It was at the height of the tomato season. I never saw so many tomatoes, from the ripe fruit, in trucks, waiting to be weighed, to the finished cans ready for the labels. Last of all, we were taken into the chemist's laboratory, where the contents of every vat is tested. The chemist, an intimate friend of Cousin Jim's, explained his work. All about were great barrels of spices and jugs of seasonings. Some, he assured us, were the "real thing," but the great majority were artificial. Can you imagine jar after jar of synthetic mustard, allspice, mace, ginger, cloves? Even synthetic onion juice and an enormous demijohn of synthetic garlic oil. Now the finished product of this cannery is said to be the most delicious on the market, and no doubt the flavor is delicious. But what real food value can there be if that is a sample of our factory foodstuffs?

I came home more determined than ever before that every morsel our family ate should be as nearly 100 per cent natural as possible, honest-to-goodness food. Therefore, in the following you will notice, except for the spices, of which I get the very best and from the most reliable dealers, every article has real food value. I do not use vinegar, since it is not a food, but lemon juice, which is most desirable in every way.

Honey Chili Sauce—Peel and slice one dozen fine, large, ripe tomatoes, three large onions and two or three pimento peppers (or a small can). Cook until very well done, then add two level tablespoons salt, one level tablespoon pepper, one tablespoon cinnamon, one-half cup liquid honey and the juice of two lemons (about one-half cup). Bring to a boil and can. If processing, after filling and capping cans, bring to three pounds pressure for five minutes.

Honey Catsup—Let stand over night one-half bushel of fine, ripe tomatoes with one-third cup salt. In the morning add two red and two green peppers and four onions, chopped fine, and one-half cup prepared horseradish. Boil until very tender. Strain and add one-half tablespoon of cinnamon, one-fourth tablespoon cloves, one-fourth tablespoon allspice, one-fourth tablespoon ginger, one-half tablespoon black pepper and one-half teaspoonful red pepper. Stir carefully to prevent sticking and when quite thick add two cups lemon juice and two cups of honey. Boil down and bottle.

Winter Sauces—Many times chili sauce and catsup come when our honey work is heaviest, so I have found it an excellent plan to simply can my tomatoes or tomato pulp, and in the fall or during the winter when we want it, make it. To two quarts of canned tomatoes add two chopped onions and a few pimentoes if you have them. Boil until very well cooked, then add one tablespoon salt, one teaspoon black pepper, one-eighth teaspoon cayenne pepper, one tablespoon cinnamon, one-half cup honey and one-half cup lemon juice. Boil down slightly and serve hot or cold.

Tomato Preserves—If you are fortunate enough to have a few of the lovely little yellow pear tomatoes, you will be delighted with honey tomato preserves. Scald, peel and halve the tomatoes. Let stand to drain three hours, then squeeze gently and drain off as much of the juice as you can. Weigh, and to each two pounds of tomato pulp, bring to a boil two pounds of light honey. Into the briskly boiling honey drop the tomato pulp. Boil five minutes, then add one sliced lemon from which the seeds are removed and one-half inch of ginger root. Continue boiling and stirring until the tomatoes look very transparent and the liquid is quite thick. Bottle.

Honey Grape Marmalade — Pick over, wash, drain, and remove stems from ripe grapes. Separate pulp from the skins and cook slowly until the seeds separate from the pulp. Then rub through the colander. Return the strained pulp to kettle, add the skins, sweeten to taste with liquid honey and cook slowly until thick, stirring to prevent burning. Sometimes I add a bit of cinnamon or ginger root to vary the flavor. Can. This is delicious with plain bread and butter or as a sauce for cold meats.

Canned Pears—In canning your pears this season you will be delighted if instead of using sugar you use honey, substituting the same amount of honey as you would of sugar. Also try baked pears by cooking them slowly in the oven with honey sweetening and a bit of butter and dash of cinnamon. They are delicious.

Quince Honey—Wash and pare half a dozen quinces. Drop into cold water and cover parings with boiling water. Cook about thirty minutes and drain. Grate or run the quinces through the food chopper, adding the pulp as grated to the liquid drained from the parings. When all are grated, weigh the pulp and liquid and add an equal weight of honey.

Cook rapidly until thick, stirring to keep from sticking. Can.

Quince-Apple Honey—Wash carefully and pare equal weights of tart apples and quinces. To the parings add water to cover and cook for half an hour. Drain off the liquid and add to it the quinces and apples which have been cored and chopped. Cook until soft, stirring and adding a little water if necessary to prevent sticking. To each pound of fruit add three-fourths pound of honey and cook until very thick. Ginger root or a bit of cinnamon may be added if preferred, or for variety.

The Illinois Beekeepers' Tour

By V. G. Milum

The second annual tour of Illinois beekeepers came to a successful close at the Shoff Brothers' apiary, Peoria, on Saturday afternoon. At nearly every stop good-sized crowds were eager to hear the speakers. Through the hearty cooperation of everyone connected with the tour, the announced schedule of stops or visits was maintained for the four-day period, and the beekeepers did not have to wait over half an hour for the arrival of the cross-country travelers, with the exception of the last meeting, due to an extra twelve-mile drive and stop at another apiary. The weather was favorable, rain causing delay only the last forenoon, no doubt cutting the attendance somewhat.

In spite of an unfavorable season, 161 beekeepers signed the registration lists. This included some ten beekeepers, besides four speakers who stuck to the colors during the four days. The faithful ones, at the end, were H. G. Frymier of Carbon Cliff and J. W. McKenricks of Silvis, both of Rock Island county, Lawrence Peterson and son Edwin of Kewanee, B. F. Bell and wife of Kingston Mines, S. A. Tyler and wife of San Jose, George F. Harris, Jr., of Canton, and L. Edwards of Chatsworth. George Lynn and wife of Lockport also made the circuit, but did not join the group until the second day. Edward S. Kobold of Peru and W. H. Snyder of Decatur remained for three days, while several covered all or a part of two days of the schedule. Among these were Bert O. Callahan of Vermillion Grove and Walter G. Baysinger of Martinsville. They both have promised to use their influence in perfecting organizations in their respective counties. Baysinger has a high school bee club of thirteen boys, and one of his boys from Arcola, Illinois, won first prize on project at the Aurora fair in 1926 with this title, "Let the Bees Pay for the Lime for Sweet Clover."

The speakers who attended and assisted throughout the tour were Mr. Huber Root of Medina, Ohio, who displayed various kitchen utensils (admittedly pilfered from Mrs. Root's kitchen) for demonstration purposes in his talk on "New Uses of Honey." Besides this topic, Mr. Root covered "Honey Publicity" and "The Food Chamber."

Maurice Dadant, of Hamilton, gave sage advice on "Preparing Bees for the Honeyflow," "Manipulation of Package Bees," "Progress of Disease Eradication," and "Popular Misconceptions Concerning Bees and Honey," and "Some Phases of Honey Advertising."

Mr. Everet Warren, of Chicago, covered the subject of "Value of Good Queens" and "Swarm Control," while W. H. Snyder, of Decatur, discussed "Types of Hives," "Introduction of Queens," and "Diagnosing and Treating Bee Diseases."

Edwin Peterson, of Kewanee, explained how he helped to dispose of the excessive 1927 crop through talks before the school children, which is certainly a commendable way of spreading the gospel of "Honey and Health."

Mention should be made and credit given by the beekeepers to Mr. Harry M. McCaskrin, representative in the General Assembly from Rock Island county, who attended all of the first day of the tour and a part of the second, seeking information regarding beekeeping conditions and the value of state legislation in solving their problems. He pledged his support and urged that every beekeeper make it his duty to bring the value of future appropriations to the attention of their local representatives, in order that the said representatives would be familiar with the situation when the particular bills are presented in the legislative body.

The itinerary of the tour covered a distance of five hundred miles, starting at the J. L. Wolcott apiary, at Normal, in McLean county, thence east to Buckley, where an evening meeting was held in the village park in competition with a free movie on the streets a half block away. Stops during the day included the apiaries of W. E. Crowe & Son of Gibson City, Edward J. Steinburg near Sibley, Edward Adams of Strawn, J. T. Henricks of Chatsworth, John Diercrouff of Ridgeville, Herman Dunn of Onarga, and J. N. Koritz of Buckley.

The program for the second day included a stop at the University of Illinois apiary at Champaign-Urbana, where an educated swarm staid out all night in order not to miss the early morning arrival of its friends. The thrifty beekeepers insisted on hiving it, but it didn't stay put, for five days later it was still perched on its lofty pedestal. The beekeeping classrooms and workshop were visited and a peep taken at old man A. F. B. under the microscope and some recently introduced Caucasian and Carniolan queens. Someone volunteered his services, offering to do the "pinching act" on the queens. Color seemed to be a factor inviting death.

The next stop was at the apiary of George Rasmussen, secretary of the Champaign county association, who gave an interesting discussion of his system of management, in which he pointed out the necessity of reducing the amount of time consumed in manipulating colonies. He had consumed forty-four hours in eleven trips, caring for over forty colonies at an average of one hour per colony up to August 1. Other interesting stops were at the apiaries of Emory Warner of Monticello, E. C. Brunner of Decatur, Mrs. G. W. Vollmer of Macon, John Haslan, Jr., of Moweaqua, and Herbert Howell of Findlay.

The largest attendance of the second day was fifty-six, at the Moweaqua stops, while the evening meeting at Shelbyville was well attended. The latter was held at the Sparks Business College, where Mr. Sparks, who is a member of the state General Assembly, welcomed the beekeepers and pledged his support of just legislation favoring the beekeeping industry which might be brought to the attention of the state Legislature.

An interesting and new feature so far as Illinois beekeepers are concerned was a bee smoker contest. Four contestants entered. Each was allowed to furnish his own smoker and fuel and was given two matches and two minutes time to start his smoker; then the smokers were to stand for half an hour, after which three puffs were allowed, followed by the judging. Points considered were volume of smoke, coolness and odor. The winners were Mr. Brown of Monticello, Piatt county, Mr. Berry of Assumption, Christian county, and William Reulecke of Assumption, in the order named. The fourth contestant, through over-eagerness and nervousness, exhausted his supply of matches and thus eliminated himself.

The third day ended with a good rest at Springfield after visits at several interesting apiaries in Montgomery and Christian counties. Probably the most interesting point of the tour was the home of Frank

Zadel, at Witt, where, in addition to the neat and attractive apiary, the crowd, numbering sixty-six, was enthused over the honey lemonade that flowed from a "miraculous pitcher" and honeynut bread and cookies served by Mrs. Zadel and Mrs. Wolcansek. Huber Root won the marathon at fourteen glasses.

Other interesting stops were made at the apiaries of C. F. Slater at Pana, O. W. Kennett at Ohlman, and Frank Bishop, Joe Bearden and Mr. Berry of Taylorville. Kennett and Bishop gave interesting discussions of their systems of management, while Mr. Bearden explained his methods of rearing queens. Having timed the arrival of the tour, he had on exhibition a frame of about sixty queen-cells from which the queens were just emerging. Bearden refused to make a speech, but when the questions were all answered the deed was done and well done.

The fourth day carried the swarm of beekeepers from Springfield to Peoria, with stops at the apiaries of F. Ressinger at Mason City, S. A. Tyler at San Jose, and B. F. Bell at Kingston Mines. At the final meeting Mr. Shoff expressed his satisfaction over the use of bees for pollination purposes in the orchards, stating that they did not run the colonies for profits from honey and tried to arrange the spraying schedule to kill as few bees as possible. He said that probably most bees were killed at the mixing plant rather than from poison from the flowers, since in their small orchard they were able to delay spraying until practically all bloom had fallen. He pointed out the greater difficulty in connection with larger orchard tracts.

A generous helping of good old apple cider and doughnuts served by Mr. and Mrs. Shoff, after the last tired speaker had gasped his message, sent the visitors away feeling that the tour had been worth while.

Advertising in the Bee Journals

By Homer B. Turrell

"Amen" to all Mr. Turrell says about wasted space in advertising. Read it over, if you advertise, and let it soak in, because it will prove a servant in the house and not an ordinary tramp.

OUTSIDE of the problem of creating national publicity for honey, there is that form of advertising, more individual and personal, which we see monthly in the various bee journals. From the space occupied by them each month, one would conclude that the beekeepers are firm believers in the efficacy of printer's ink when they have anything to sell. It is of a few points in connection with this phase of advertising that the writer wishes to speak.

Let us first examine the two words "For Sale," which appear so frequen , in the classified columns. Is it necessary that they appear in a column already headed "For Sale"? Of course, these words should be used where any doubt might arise, but are they of such news value that they should appear first, and in capitals? In the December number of the American Bee Journal these words are found inserted first, in the classified ads, twenty-seven times. At this rate, counting the life of the Journal at sixty-two years, a total of $2,008.80 would have been expended. In a copy of Gleanings the words appear sixty-seven times. Allowing fifty-four years for the life of that journal, and figuring on a basis of monthly issue, the space occupied would have been worth $4,341.60 — nothing to get excited about, but in these days of efficiency an item that may be noted. In the December number of the American Bee Journal it can be seen that the bee and queen breeders, who are supposed to know their onions, use the "For Sale" sign only a single time.

A good advertisement should be a piece of news truthfully told; if not news, it should at least be interesting. A good illustration of this is the statement of Jess Dalton in the December issue of the American Bee Journal in which he says that he is in New Orleans, scraping together another outfit in order to take care of his customers, both old and new. This ad brings back a picture of a calamity that is still fresh in our minds and shows us how an enterprising business man may rise superior to adversity.

The man who first discovered that alliterative phrase "quality queens" was not so dusty, but after the combination had been used a few thousand times it began to get hackneyed. The late Senator Beveridge told us that adjectives did not mean anything, anyway, so why continue to put so much dependence on them. It would be more important to know that a queen was willing to hustle out and lay a comb full of eggs before breakfast, while other queens were loafing in the parlor, eating bread and honey.

Not only should the ad be interesting; the nrst word should attract attention. A man might advertise his ranch as being three miles from high school. That would not be news, but if the compositor made it read "three miles high from school," that would be news and arresting. So, too, the terms "golden, three-banded, A-1, finest quality, highest grade," etc., have been used so often that they hardly attract attention now; and the beekeeper can hardly afford to use them if he can find other words, bright and sparkling, which express just what he wants to say. Since the English language contains several hundred thousand words, why not shop around a little?

Of some salesmen it is said in reproach that they are nothing but order takers; but in the columns of the bee journals we often read that so-and-so is "booking orders." Now, while this may be news to the dealer's friends and old customers, it is nothing that the stranger would consider of importance; the expression hardly deserves prominence in a paid ad. It is quite dignified and all that, but will it bring home the bacon?

One advertiser will use very large type and say little; another will use small type and say a great deal, using his space completely. The reader has the feeling that the first is shouting at him and resents it; the other appears parsimonious in trying to get too much out of the space used, which is equally resented. A third man may use the same space and attract more attention by setting only one-quarter of it in ordinary reading type. He does this by creating the unusual and also in making his stuff easier to read. The wide margins of white and the ordinary type contribute to this end. It is not the large letters that make for ease in reading; it is rather the isolated groups of letters forming words, and the more completely the groups are isolated the easier it is to recognize the words.

Mention may also be made of the use of pictures as an aid to publicity. Doubtless all readers of the American Bee Journal remember the "Jim Says to Nick" series of the Fred W. Muth Company which lately appeared in the magazine. The homely setting and the line drawing combined to make this picture particularly effective.

It is said that fiction is merely truth touched by imagination. Some advertising might be described as imagination untouched by truth. In this respect it rises superior to fiction. Those who want fiction can always read the farm papers. They say that truth lies at the bottom of a well; but good advertising is where you find it. Indiana.

Paul McCann and Mrs. McCann, of Seattle, Washington, by their health food car. Honey is a big item in their line and its sales are helped by a glass hive, put with their window display

A Honey Booster Who Really Boosts

By Natt N. Dodge

ONE of the most sincere boosters of honey in the Pacific Northwest is Mr. Paul R. McCann, of Seattle. Mr. McCann is not particularly interested in the beekeeping industry, but he is concerned with the public health, and is known as Seattle's health-food specialist.

"Proper diet," says Mr. McCann, "is the basis of health. The cause of many human ailments may be directly traced to improper diet, and in the majority of cases even the most stubborn disorders will respond favorably to a scientifically correct diet rigidly maintained for a sufficient period of time. Foods composed of the whole-grain cereals, nut-meats, fruits and their juices, vegetables, and honey, none of which have been refined nor had their vitamins and mineral elements destroyed by overheating, constitute the fundamentals of healthful food intake."

Mr. McCann maintains a natural-food service in Seattle, and the most prominent of the products on display in the windows of his establishment is honey. Furthermore, he recommends and sells only such articles as are approved by the food laboratories of his brother, Mr. Alfred W. McCann, of New York. It is interesting to note in this connection that Alfred W. McCann is recognized as a world authority on foods, and that he is a strong exponent of honey, as is attested by the prominent place given to this sweet in his books, "Science of Eating" and "Science of Keeping Well," and by the numerous articles lauding honey which he has written for "Correct Eating," "Physical Culture," "Strength," and other publications. He calls honey "The Salt of the Earth."

For the last two years Mr. Paul McCann has given weekly health talks over the various radio stations in Seattle, and has on file more than twenty-seven hundred letters, from all parts of the United States and Canada, commending him upon his work. He mentions honey, in these talks, as being the most healthful of sweets, and recommends that it be used in preference to any other sweet. He has recently obtained a glass observation hive containing combs covered with bees, which he keeps in the store window in connection with his honey display.

"I find," said Mr. McCann, "that the bees attract considerable attention from persons passing on the sidewalk, and that my honey sales have doubled since I placed the observation hive in the window. People are learning that I have only pure, high-quality honey, and they return time after time to get it. People who are unwell realize that health is one of life's priceless possessions, and they are thankful to learn of honey's value in helping to restore to them what they have lost. Where health is concerned, price is no obstacle when it comes to pure, high-quality honey. People will more willingly pay 95 cents to $1.50 for a five-pound pail that they know is of the highest grade honey than they will 57 to 69 cents for a honey of which they are suspicious. I sell more real, high-quality honey over the telephone by satisfied, educated honey users calling in for not only one, but two, three, four, and sometimes as many as five five-pound pails at a time. High-quality honey at a fair price, with publicity of an educational nature, will convince the consumer of the wonderful health giving, health promoting, and health keeping value of honey."

The accompanying photograph shows Mr. and Mrs. Paul McCann holding the observation hive which is kept in the store window. Mrs. McCann is also an ardent booster of honey, keeping it constantly on the table in her home, and using it in the preparation of the foods which her family eats. She has recently become much interested in experimenting with honey, and in finding new and tasty uses for this health sweet. The results of her work she turns over to Mr. McCann for use in his broadcasting and other health-food publicity. Washington.

A Bee Veil that Keeps 'Em Out

By Elmer G. Carr

It has often been a matter of interest to me to see how eagerly a woman scans the pages of the latest fashion periodical, and yet I find myself in about the same state of mind when the new bee catalogues come to hand.

While all the latest offerings in bee fixtures are of interest, my greatest curiosity is for the latest type of bee veil. I am anxious to learn if as yet there is offered a really good one. From my viewpoint, all are lacking.

If I mistake not, we must credit Langstroth with the wire cloth idea, and I've seen nothing as yet which serves me as well as one made of this material.

There are several forms of wire cloth bee veils offered by the 1928 catalogues, some to be worn with and others without a hat. To be obliged to wear a hat with a bee veil, it seems to me, is to add another fixture without any compensating advantage.

The one catalogued to be worn without a hat has a lot of gew-gaws to be adjusted, which also adds a needless nuisance. It further provides that the bottom of the skirt shall be drawn tight around the throat. This is objectionable in two ways. First, in weather when work with bees is possible something tight around the neck is far from adding comfort to the operator. Second, I'd like to see a veil so adjusted that an angry bee would not sooner or later, usually sooner, bore her way to the flesh unless the string were drawn so tight that it shut off the wind of the operator.

The first Alexander veil I wore had no provision for fastening down the bottom of the skirt, except it be tucked into the shirt front or the coat buttoned over it. I'd like to see the person who wants to wear a coat when working with bees!

My experience was the bees right readily found their way in under the veil with the operator. If they learned they were imprisoned before they stung, I was saved the pain of the sting, but the bees buzzing around under the veil was far from reassuring. This disgusted me with the Alexander veil and for a few years I wore one made of tulle. Frequently this had holes in it large enough to admit a bee, since it was very subject to damage by being caught on some object and torn. Also the slightest breeze caused the veil to touch the face. The bees seemed to know it soon as this happened and proceeded to take advantage of the opportunity to sting at that point.

I d not claim credit for devising the veil which I find most satisfactory under all circumstances. It has been gradually evolved through personal experience and the suggestions of others.

This veil is made of a piece of painted wire cloth mosquito bar nine and a half inches wide and thirty-two inches long, fastened in the form of a cylinder. The cut edges are turned over three-eighths of an inch to take care of the cut wire ends. Some persons have used copper wire cloth, but found the gloss is a decided disadvantage. A piece of cloth nine and a half inches by twelve and a half inches is sewed on the outside of the cylinder, with the center over the place where the wire cloth is joined. A piece of cloth six and a half inches wide and thirty two inches long is sewed to the top of the cylinder and gathered together in the center to form the crown of the veil. A skirt of cloth nine and a half inches wide by thirty-two inches long is sewed to the bottom of the veil. This should be hemmed.

Four inches from the center of the front of the veil, on each side, is sewed a piece of half-inch tape forty-eight inches long. This does not work nearly so well when threaded in the hem, as is sometimes done.

The veil is worn without a hat. When the two pieces of tape are passed to the back, without crossing in front, crossed in the back and then brought forward and tied across the chest, the veil is drawn snugly across the back of the neck, across the shoulders and also across the chest. The only way a bee can get under this veil is when the tape is allowed to be too slack.

The veil rests on top of the head and also the back part touches the head. The piece of cloth in the back protects the head from the sun and also prevents bees from fussing about the hair which might stick through the wire cloth were the cloth not there.

Heretofore I have used heavy muslin for the cloth part, but because this shows the soiling so readily, I have adopted khaki cloth and find no disadvantage, and it does not show the dirt so readily.

All the sewing can be done on the family sewing machine, except joining the wire cloth, provided you can convince the "misses" this is a good thing for the machine.

New Jersey.

Early Tennessee Beekeeping

Early settlers of our country often mention bees, bee trees, and bee hunters.

Over a century and a quarter ago two Moravian ministers, Brother Steiner and Brother Schweinitz, made a trip into the back country. Down in the Cumberland settlements near Nashville, Tennessee, they visited District Judge McNairy.

Here Brother Schweinitz makes an interesting note in his journal:

"This is the place where so many bees assembled that caused so much talk and were looked upon by superstitious people as an evil omen. In September, 1798, more than forty swarms of wild bees had gathered here in a short time and settled on the garden fence. Several of these swarms were caught, but they did not remain in the hives and again settled on the garden fence. As they began to rob the local domestic bees, the people here, Mr. McNairy being off on a journey, could think of nothing else to do than to burn them with straw fagots. Last fall, at the same time as the year before, twenty swarms of wild bees came and settled on the garden fence. Mr. McNairy was at home this time and did not allow them to be disturbed or injured. After some time they flew back to the woods. It is said that there are many wild bees in the forest."

Mattie M. Goodpasture.

A Rare Occurance

In the British Bee Journal of June 14th, Mr. T. A. Cooper, of the Isle of Wight, gives account of two colonies which he united last fall, by the newspaper method. Although the swarms got together, they never mixed enough for the queens to meet and fight and the hive contained two clusters this spring, with a queen in each. So he divided them again into two separate colonies.

Crop of British Columbia

According to a report of June 16, 1928, from American Vice Consul Robert M. Newcomb, at Victoria, British Columbia, the province produced 986,000 pounds of honey in 1927, an increase of 86,462 pounds over the production of 1926.—Department of Commerce.

"Small Advertising With Big Profits"

By L. B. Lyons

A bee man down in southern Ohio found a market for all the honey he could furnish, but at such a small profit that he decided to look elsewhere for a market first.

Some one suggested sending letters to prospective customers, which finally gave him an idea that sold all the honey and he had to call upon a bee man several miles from him for a greater supply.

The fellow bought his stationery at the printer's instead of at the drug store. He had his name printed for the letterhead for a very small sum. Next he rented a multigraph machine for one week from a merchant in the nearby town. With this he made many copies of one letter which he had written and addressed to anyone. This system saved time as well as printing. Thus he had made his own sale bills, and to the letter he added several other farm products that he had for sale.

These handbills he passed about the town, to the homes. He was surely gratified by the results of this very economical scheme of advertising.

The bee man of his neighboring town, not to be outdone, declared his very own Honey Week. He loaded a great many cakes of honey into his car and brought them to town. There he went from store to store and shop to shop, and left a few cakes for them to display for him. He assisted them in arranging them with their own merchandise. Naturally, he displayed his own signs about town, too, as he was the only "honey man" in the community, as the merchants dubbed him. This got him sales. He, too, rented a multigraph machine, with which he turned out hundreds of copies of recipes containing honey, and these recipes he in turn gave to the merchants for their customers of other products. Nearly every free recipe sold at least a cake of honey. There are economical ways of doing your own marketing. Are you employing any of these ways? Illinois.

Beekeeping North of 54

By Joseph Griffin

HOW far north can bees be profitably kept? Here at Smithers, British Columbia, we are in latitude 54° 40", just even with the southern point of Alaska, and we winter our bees with fewer losses than farther south. We use four-hive wintering cases with four inches of sawdust under and around the hives and ten or twelve inches on top. They come through our severest winters with very little loss. Last winter was very cold. It was 6 below zero on the twelfth of November and as low as 45 below once during the winter, but I lost only five out of thirty-seven. They had no winter flight from October until the end of March.

When I started here in 1917, there were no other bees within three or four hundred miles, so I was able to pick up some information not readily found in a country where bees are plentiful. I began with very good bees, but soon found I was raising the poorest queens I ever handled. This was the result of inbreeding, so I bought some new queens and brought them back to their normal condition, and kept them so by bringing in an unrelated queen occasionally.

An article in the June, 1927, issue of the American Bee Journal was of great value to me last summer. It was entitled "Regularity in the Apiary." My wintering cases were all alike and I had great difficulty in getting my queens mated. I could not understand why bees should ball a queen apparently of their own raising, as I found them doing in some cases; but the young queens were going into the wrong hives. I lost half of them. To remedy this, I got three different colors of paint and painted the alighting boards different colors. This was successful and I lost but one queen out of forty-two. After painting, I streaked and spotted some of the boards with another color. This may be unnecessary, but it does no harm.

Honey in this country does not show the slightest trace of granulation. I have several jars taken off nearly a year ago and they are as clear as ever. British Columbia.

Future Looks Good in Oklahoma

The greatest drawback with our commercial beekeepers in Oklahoma is the fact that so frequently we have drouthy summers that have in the past kept the bees near starvation for so long a period that it made it almost impossible to carry them through. There are some sections in the state, however, where sweet clover is on the increase and where commercial beekeeping is, I think, bound to come to the front sooner or later, not in a big way, but still enough to make a good, substantial sideline for the farmer. In Pontotoc county we have some very interesting beekeeping territory. One man assured me that for the past three years twenty-five colonies of bees on his place had netted him $500 per year; not a bad income, as I see it. There is also some very good beekeeping territory in Caddo county. Around Oklahoma City there has been some advance made in the matter of commercial apiaries; in fact, there are several men who are counting strong on the increasing acreages of sweet clover there. C. S. Rude, Oklahoma.

Interesting Personalities in E. M. Cole

The name of E. M. Cole has long been familiar to the readers of the bee magazines. Cole writes an occasional article which is full of information concerning bee behaviour. He is one of the few remaining of the old type of close students of which Doolittle, Root, Charles Dadant and Dr. Miller are well known examples. There are only a few men nowadays who love the bees for what they learn from them rather than for the honey which they produce. Cole is an example of the old type; he gets so much interested in what the bees are doing and why they do it that the financial returns from the hives are of secondary importance.

It is doubtful whether any man living has followed the beekeeping literature more closely than Cole. He is familiar with the writings concerning bees since the time of Butler and can tell what important contribution each man has made. Likewise he is quick to recognize some old fact when newly brought out and presented by some current writer as his own discovery.

Cole depends mostly upon his bees and lives all alone in a little cottage in Audubon, Iowa, where he is sought out by bee men from far and near who chance to come to that vicinity. He is on friendly terms with the children of the town and usually is to be seen followed by from one to half a dozen youngsters who seek his company. They look to him for information concerning bees and flowers and all the wonder world of nature of so great interest to a child.

F. C. P.

Details of the Water-Formalin Treatment

By J. H. Merrill, Ph. D.

In using the new formalin treatment to sterilize foulbrood combs there are two ways which seem equally effective: to soak the combs in a formalin solution or to vapor treat them with formalin gas.

In the April, May, and August numbers the vapor method is fully described. Here Dr. Merrill gives the use of formalin solution as worked out by Mr. Fuller, with several new additions that are helpful. We believe it the best way yet given to use the solution.

BEEKEEPERS who have been confronted with the necessity of destroying valuable brood combs will be interested in a method whereby combs may be successfully treated at a moderate cost. It would be well worth while if all such beekeepers could visit Mr. O. F. Fuller at Blackstone, Massachusetts, and watch him "put a batch of combs through."

Mr. Fuller began work as a bee inspector in 1914, and in the performance of his duties destroyed many good brood combs. It is not to be wondered at that he began experimenting in the hope of discovering a means of saving such combs.

Alcohol-formalin solution had been successfully used in the treatment of combs infected with foulbrood, but Mr. Fuller began his experiments in 1923 with water-formalin, owing to the fact that alcohol is expensive and not always easy to obtain.

He sent his first treated comb to Dr. Sturtevant of the Division of Bee Culture at Washington, D. C., for examination early in February, 1925. The report was returned to him that all of the uncapped cells were safe to use, but that 60 per cent of the capped cells showed that they were unsafe. From this time on, it is needless to say, Mr. Fuller always uncapped every comb before treating it. And, by the way, he says that he uncaps rather deeply, as this facilitates the entrance of the water-formalin solution into the cells.

He at first used water and formalin in the ratio of one part formalin to twenty parts of water. However, he has gradually increased the amount of formalin used until he now recommends using one part of formalin to four parts of water.

In the course of his experiments he has not only carried out his own ideas, but has tested those of others as well. Some of the latter have proved worth-while, but others have been found to be useless. It is interesting to note here how he solved the problem of ridding the combs of paraformaldehyde. It was noticed that after treated combs were placed in the hive it frequently happened that a great number of the bees died. This was found to be due to the paraformaldehyde which remained in the cells after treatment. In February, 1926, he hit upon the idea of soaking the combs after they were removed from the formalin bath in an ammonia bath. When two ounces of 26 per cent ammonia was used to every gallon of water it completely neutralized the deposit of paraformaldehyde which remained in the combs. Of all of Mr. Fuller's discoveries, this is probably one of the most valuable.

One of the existing ideas about water-formalin was that the addition of soap would increase its power of penetration. Mr. Fuller used different soaps at various strengths with the same results; he found that the acid in the solution precipitated out the soap so that in a very short time there was no soap left in the solution. He even used Ivory soap at the strength of one-fourth pound of soap to five gallons of water.

Another objection which was raised was that the water-formalin would not penetrate combs that were filled with pollen. Before immersing the combs in the formalin bath, Mr. Fuller always soaks them in a soap solution, and later, when this solution is shaken from the combs, the pollen has become so loosened that a large part of it readily falls out. Furthermore, he has had treated combs examined at Washington which contained pollen, and in no instance were any disease germs found under the pollen, from which it seems safe to infer that the water-formalin solution had penetrated the pollen. As a further proof of this statement it might be added that during the summer of 1927 Mr. Fuller treated over seven hundred combs successfully.

Those who think that the operation would be a messy, disagreeable affair would be disillusioned if they could watch Mr. Fuller treat combs in his bee-tight workshop. Not only is the whole process neatly done, but as carried on by him there is absolutely no chance of spreading foulbrood. Every window is screened, and if by any chance a bee should gain entrance to the house it is caught and killed. Bees are never allowed to fly from the house under any conditions.

Within the house Mr. Fuller has the disinfecting tanks neatly and compactly arranged. His workshop is not large, yet there is room to do all that he wishes to do conveniently and with no waste steps.

As before mentioned, all combs are uncapped before being treated, and the resulting honey is used in the manufacture of honey vinegar. It is never sold as honey.

Frequently a comb breaks in the extractor or in the process of treatment. In order to safeguard against this, Mr. Fuller first uncaps all combs and then securely fastens each comb into the frame by passing a stout cord over the top bar, crossing the two ends just beyond the lower edge of the comb and then tying them securely beneath the bottom bar. Two or three such cords will hold any comb in the frame intact throughout the whole operation.

At one end of the room is the sink, or tank, in which the combs get their first soaking in a soap solution consisting of two ounces of liquid soap to five gallons of water. Mr. Fuller uses a cocoanut oil liquid soap. The frames remain in this bath for twenty-four hours. Then Mr. Fuller shakes the water from each comb by quick jarring motions into another tank, which is provided with a tap at one end. It is surprising to see the loosened pollen fall out. When all combs have been removed from the soap solution, a plug in the bottom of the tank is lifted and the waste solution then flows through a pipe which carries it eight feet underground. The water in the shaking tank is also drained and carried underground. The pollen and all other refuse remaining in the tanks is carefully collected and burned at once.

The next move is to place the frames in the formalin bath. For this bath Mr. Fuller has a specially constructed tank in which the frames are placed in a horizontal position, because it is in this position that the solution best penetrates the cells. When the frames are in position they are cleated down and the formalin solution is allowed to flow into the lower part of the tank through a hose which connects to a small barrel filled with the water-formalin solution. The barrel is raised or lowered by means of a tackle and falls, and when the frames are completely immersed a support is placed beneath the barrel, thus maintaining the solution at a proper depth. He gives each frame several sharp raps, and this jarring causes the air imprisoned in the cells to come to the surface in air bubbles. A cover with a two-inch flange is now fitted over the tank and over all is tied a rubberized cloth. This tends to prevent the evaporation of the formalin. Mr. Fuller prepares his disinfecting solution at the beginning of each season, using one part of 37 per cent formalin to four parts of water. In order to keep it

at the required strength he adds at the first of each month one gallon of formalin and two gallons of water. This is kept stored in the air-tight barrel.

After the frames have remained in the disinfecting tank for three days the barrel is lowered to the floor and the solution drains from the tank back into the barrel. The frames are then shaken dry and placed in a specially constructed rack to air for one hour.

Mr. Fuller next places these combs in the ammonia bath which has been mentioned before. The value of this bath may be judged by a little experiment which he tried. He kept a comb in the formalin bath for fourteen days and then allowed it to remain in the ammonia bath for fifteen minutes. A chemical analysis of this particular comb failed to reveal any paraformaldehyde even after such a long immersion in the formalin bath. In using the ammonia bath Mr. Fuller has found that brushing the combs increases the penetration of the ammonia into the cells.

It is not necessary that all beekeepers should adopt Mr. Fuller's plan of arrangement for his disinfecting tanks. However, for compactness, accessibility and ease of operation, it is doubtful if his plan could be improved upon. The soaking tank, which contains the soap and water solution, is copper-lined, and is 28 inches long, 21½ inches wide, and 13½ inches deep, inside measurements. It accommodates twenty frames. The remaining tanks are placed at right angles to the soaking tank for convenience of operation. The shaking tank, of galvanized iron, is made wedge-shaped at one end, with a small faucet at the point of the wedge. The disinfecting tank is made of copper, and is 28 inches long, 21 inches wide, and 14½ inches deep, inside measurements. This tank will also accommodate twenty frames. It is provided with a galvanized iron cover with a two-inch flange which fits snugly around the sides of the tank. Over this is spread a rubberized cloth and over everything is placed another galvanized cover nine inches deep and one and one-half inches wider than the tank itself.

The cost of the whole process is surprisingly low. Liquid cocoanut oil soap may be purchased for $1.25 per gallon, and since only two ounces are used to every gallon of water, this expense is almost negligible. Mr. Fuller pays $1.25 a gallon for the 37 per cent formalin, and even this may probably be purchased cheaper in some places. For ammonia he pays 60 cents a gallon. He disinfects about two hundred and forty frames a month and estimated that it costs him about two cents a frame. However, he believes that it could be done at a cost of a cent a frame in larger quantities.

Formaldehyde has a tendency, when stored, to separate, particularly if it is stored in a cold place. It becomes cloudy, and crystals of paraformaldehyde are formed. In order to test the value of such formaldehyde, Mr. Fuller syphoned off some of the clear solution and used it to treat some combs. A sample comb was analyzed and found to be unsafe for use. He then placed the jug of formaldehyde behind the stove and shook it every day until the crystals and cloudiness disappeared and the solution was apparently normal. Combs treated with this reunited formalin were found to be safe to use. Right here probably lies an explanation of some of the failures experienced by beekeepers in using formaldehyde.

Mr. Fuller has submitted between twenty-five and thirty samples of treated combs to the Bureau of Bee Culture at Washington, D. C., and of all these only two were found unsafe. Both of these exceptions are easily explained. His first comb was, as already mentioned, not uncapped, and the second failure was when he syphoned off the clear portion from the cloudy formalin.

The value of his work lies not only in the fact that he has developed a successful method of treating combs with water-formalin, but in that he has rid the process of many of its bugaboos, and added many safeguards. His most valuable contributions are: fastening the combs into the frame with a cord, jarring the air from the frames after they are in the formalin solution, using a brush to facilitate the entrance of the ammonia into the cells, and the discovery of the use of the ammonia to neutralize the formalin.

Experimental work of this nature is rarely carried on by a private individual. It is usually found only in experimental laboratories. Mr. Fuller is deserving of a great deal of credit for the years of careful research work he has done and for the tireless energy with which he has prosecuted his experiments. Would that we had more beekeepers such as he.

Massachusetts.

Outdoor Feeding

By A. V. Small

For several years we have been feeding outdoors and like it better each time we try it. We find that one No. 3 washtub will feed from twenty-five to fifty colonies successfully. Make the bees burrow through excelsior or dry tumbleweed, and cover it all with brush.

We give them fifteen gallons of feed at a time, about the consistency of maple syrup and just about that color, using honey—any old honey that has been thoroughly boiled.

The feed, being dark, is easily recognized around the circle of brood, and we find it in all colonies with a surprising evenness. As an experiment, we left one yard unfed, but placed a tub of feed in another yard about one and three-fourths miles away. We were never able to see any of the feed in the unfed yard, indicating that bees from that yard were not working that far from home to any extent. This makes me believe also that foulbrood has a hard time getting further away than a mile.

Our yards that have abundant pasture in a half-mile radius gather noticeably more than those where the bees have to go a mile to get pasture. I do not know how far bees will go, but I believe a mile and a half is the largest radius practical to use in figuring available pasture.

Kansas.

Samples of Honey Wanted for Fermentation Study

A rather exhaustive study of the causes of fermentation of honey is being made at the University of Wisconsin, under the direction of Professor H. F. Wilson. Professor Wilson is quite anxious to get samples from all parts of the country. Beekeepers who have honey in containers of any sort which shows signs of souring or fermenting are requested to send samples of this honey directly to Professor H. F. Wilson, University of Wisconsin, Madison, Wisconsin. He will examine the samples and, if possible, give advice as to the cause of trouble and what to do to remedy it. The samples, of course, will be retained at the university for use in further study of this problem.

So far, they have been able to isolate about ten different strains of yeast which ferment honey. Not all of these are from the United States. They are particularly anxious to get samples of honey from different parts of this country, especially the different kinds of honey. Samples need not be large, as a few ounces will do.

Samples are also desired of extracted honey from sealed combs to determine the facts with regard to the moisture content of so-called "ripe" honey. Many beekeepers will, no doubt, be interested in this problem and will be glad to cooperate by sending in samples. In each case an individual report will be given.

J. J. Wilder Has Risen to Fame as Foremost Apiarist

J. J. Wilder at his Florida home

THIS is the title of a two-column newspaper article concerning J. J. Wilder, written by Liston Elkins. It is a good account of one of our most important beekeepers.

Mr. Elkins credits Wilder with 15,000 colonies of bees, with a number of packing plants, as well as a manufacturing plant for beehives and supplies in southeast Georgia and north Florida, with Waycross, Ga., as headquarters.

It is the story of the rise of a penniless student of Mercer University to top rank among American beekeepers.

Mr. Wilder spent four years at Mercer University and it was through the influence of a college mate, Tom Williams, that he decided to look into beekeeping as a profession. Williams told him of a Mr. T. W. Livingston who had brought a carload of bees from the North to south Georgia, establishing an apiary at Leslie. It was this bit of information that led Mr. Wilder into the bee game. In telling his own story of his career, Mr. Wilder says: "Leaving the old homestead, some eighteen miles south of Macon, on Tobascoffee Creek, I came to south Georgia because of the reports of the possibilities there. Railroads were being built and the country was ready for settlers, and I was ready, too.

"I was already a bee enthusiast because of what I had seen of the bees and beekeeping in parts of the country where my parents lived and traveled.

"South Georgia then was practically an unbroken pine forest. Railroads were new and sawmills were numerous. There was considerable business activity at the mill points.

"I went to Cordele and there bargained with Colonel Shipp for five city lots on the outskirts of the little village. The large pine timber had been taken from the lots and the small timber on them was about the only thing they possessed of value. I obtained employment as a carpenter with Colonel Shipp, to work out the price of the lots.

"During the first year, Mrs. Williams gave me a hive of bees for taking care of her apiary. I carried the badly decayed old hive and the bees home with me and in the year 1897 I actually became a beekeeper. I began in dead earnest in a practical way the study of bee culture. The following year I transferred this hive into a modern one.

"I was happy because I had really become a beekeeper and had my own nice little yard. Will I ever forget those dear, happy moments while sitting in the door of my little shack, looking at my start? My heart would heave while I was dreaming of life's great joy and possible success. My little shack was hardly large enough to hold me, and I was too proud to stay in it or out of it. I obtained bee literature, subscribed for all the bee journals I could hear of, busied my hands and my mind. I visited beekeepers far and near, especially my old friend, Livingston.

"All this I kept up and doubled my bee business each year. Once in a while I trebled it. I studied and worked and gathered information from every available source. Soon I had several counties around Cordele stocked with bees and was making large crops of honey each year, receiving good prices.

"With some money ahead, I went down into Florida. I visited Columbia, Suwannee and Lafayette counties, where I bought all the box-hives I could get, transferring them during the winter to modern hives. Soon I was drawing big crops from these counties as well as from my Georgia apiaries.

"Studying the country for several hundred miles, I found that in and around the Great Okefinokee there was a wonderful field for producing a very fine grade of honey I shipped several carloads of bees into Fargo, on the famous Suwannee River, and, in the course of several years, shipped many carloads of bees into the Okefinokee section, and at the present time there is a belt of apiaries that stretches approximately three hundred miles in a circle around the Okefinokee, the natural wonderland of the Southeast.

"Among the fifteen thousand colonies established in this territory, I have built a number of modern honey packing plants and therein installed equipment for packing and marketing the delicacy."

As our readers know, Mr. Wilder is one of the chief authorities on beekeeping in the South and deserves unlimited credit for the wonderful success he has attained unaided in developing the beekeeping industry in his part of the country. He is publisher of the "Dixie Beekeeper," which is widely read among our subscribers. His book, "Southern Bee Culture," was published in 1908, and in 1927 his second volume, "Wilder's System of Beekeeping," was issued from his pen. We are glad to pay him recognition.

Beekeeping in Middle Albama

By Walter Johnson

Beekeeping is becoming more extensive in the middle portion of Alabama and more and more interest in the subject is being manifested each year. I have kept bees for nearly a quarter of a century here and have carefully observed the attitude assumed toward beekeeping up to the present time.

I like to contrast the present interest with that of some twenty-three years ago, when I started in beekeeping as an avocation. I believe we have conditions here suitable to successful beekeeping in the way of climate and honey plants. As for the marketing of bees and honey it compares favorably with other localities.

Many of the leading farmers in this part of the state are adding a few colonies of bees to their other possessions. The number of hives is increasing and becoming more widely

distributed, therefore, each year. Our county farm demonstrators are encouraging the beekeepers. Our state has passed laws to promote and protect the industry. A state inspector has recently been appointed to supervise the work in the state, and his report of conditions in this section, upon recent inspection is favorable.

Modern beehives and equipment are becoming more common among my beekeeping neighbors, and I believe all tendencies are towards progressive beekeeping.

Thanks to the Government publications which point out the better methods of keeping bees, our beekeepers have a ready source of information. I think that the market report as mailed out to the beekeepers is invaluable. A splendid feature about these Government bulletins is that they are free to anyone who requests them. Not all of this printed information was available when I began with a few stands of bees housed in old-fashioned hives. The few people who kept bees in this section of Alabama twenty-five years ago were against progress.

Perseverance is a valuable asset in the beekeeper's work, and I am proud to notice the remarkable change that has taken place, and I hope to see more and better beekeeping in coming years, and to help with this movement myself.

Inspection Progress in Utah

Bee inspection has progressed very rapidly this season and bees have been found to be in better condition this year than last, according to D. H. Hillman, State Apiarist.

Little disease was found this season in the Ashley Valley surrounding Vernal, the report states. The burning of all infected colonies found there was practiced last year, and the beekeepers are jubilant and feel grateful over the assistance provided by the state board in giving the county a thorough inspection and cleanup, Mr. Hillman said.

The western half of Uintah county was found to be in better condition than last year, with fewer infected apiaries, but two badly infected apiaries were found, one at Lapoint and one at Leeton. In both of these cases the county inspector took charge and is making a thorough cleanup by transferring the bees into clean hives and melting up all combs in each yard, thereby saving bees, hives, frames and beeswax.

Duchesne county was reported in fairly good condition as far as bees are concerned, with some districts entirely free from disease, while others show slight infection in some apiaries. Emery and Carbon counties were reported improved over former years, with conditions improving in Utah county. Utah.

Honey in Milk Bottles

GEORGE PRATT, Secretary of the Kansas Beekeepers' Association, puts a large part of his honey for local trade in milk bottles. This provides a popular container, since it can be used when the honey is removed or the customer can redeem it for cash at any store where milk is sold. The picture shows a half dozen of these bottles in a handy crate easy to handle.

Pratt has some original ideas about selling honey, and at the Kansas summer meeting outlined a plan of advertising at the State Fair which the Association will probably try this year.

The following is extracted from a letter from Mr. Pratt to a member of our staff: "I sell mostly extracted honey to the grocer. If it does not move rapidly, he must have more profit for selling, because he must charge for space and time in his store. It is up to the beekeeper to help him sell easily and rapidly.

"My idea is to have posters about 4x6 inches with a small picture showing comb and extracted honey and a blank space to permit the grocer to state the price of each, as all grocers do not sell at the same price. These posters could be printed on cards for display with the honey. If such posters were placed in a conspicuous place in every store, it would provide the cheapest selling campaign the producer could find.

"I have 'Pure Honey' printed on my milk bottle caps. If I had such posters to display with the honey, my needs would be supplied. The government poster is too large for such a purpose. These should be printed in a large quantity so individual beekeepers could buy them at a low price. It costs too much for each beekeeper to print his own."

Frank Hill Passes

Mr. Frank Hill of Sabetha, Kansas, passed away at the home of his daughter in Humboldt, Nebraska, June 7, 1928.

Mr. Hill was engaged in beekeeping for twenty years and was a producer of fine comb honey. He was well liked by all who knew him, and was noted for his progressive methods. He will be greatly missed in his community.

Queens Travel in High Style

Eight queenbees arrived here over the Boeing Air Transport Line recently, having traveled practically all the way from a queenbee company at Jessup, Georgia, by air, to F. L. Putney at Hope, Idaho.

This is the second cargo of bees to arrive here by airplane. Queenbees are flying in high style of late, it seems.

Natural Queen Breeding

By W. M. Egan

ALL professional queen breeders have their own methods. Every one follows nature to some extent, but some use artificial features more or less. Judging from the queens I have received, in many cases, leads me to the conclusion that there is something wrong somewhere in some cases.

In comparing them I often find I have better bees than those I receive. In the spring of 1927 I had a queen and package of bees from California which made a fair swarm during the season, but were about the crossest bees I ever handled. They would dive straight for your eyes as soon as you opened their hive. They will not be allowed to raise drones and their queen will be superseded as soon as convenient.

Several queens I received from the South were of no account. One was killed putting her in the cage. Another was barely able to crawl and all her escort bees were dead. Many I received were much inferior to my own. No doubt many breeders have very good success with artificial methods, but one thing I have decided in my own mind, and that is, not to order any queens to be sent caged so they are unable to fulfill their nature of laying eggs in transit. I do not know how much it injures them, but I would rather buy a nucleus with combs, bees, queen and brood in natural working order during trip from the purchasing point.

Artificial queen breeding, with all its paraphernalia of wood cells, compress wax cells, jelly spoon, transfer needle, cell-forming stick, etc., may be spendid, profitable and successful with some, but, as the Scotchman says, "I ha'e me doots." I prefer to let the bees make the cells where the larvæ are hatched and feed and take care of it. I was never able to handle larvæ without injuring them. The bees can do it better than I can, and I want them to do it from start to finish, except some little aid I can give them.

I was helping a choice colony to begin raising queens this last season and attempted to clip the queen's wings without catching her. I touched her with the scissors and she ran and finally dropped off from the comb outside of the hive and I never saw her afterward. From now on I shall bare some honey and set the queen's feet in it. She will then put up her wings to be clipped. Every queen should be clipped before there is any danger of swarming.

The best help anyone can give their choicest queen and colony, in my judgment, is to assist them with frames of honey, pollen, hatching bees, etc. As we examine our bees in the spring, when the weather is suitable, we should watch for the best colonies to breed from, and take the necessary hatching bees and suitable combs from colonies that can well spare them. With these, build them up until they have two stories of combs full of hatching brood and a hive full of bees.

A good method of obtaining suitable combs for this purpose is to place dated empty combs in the center of the brood nests as we examine the bees in the spring, as suggested in an article on "Manipulation" by this writer recently. When you have ten frames of hatching bees in each of two stories, they should be left until all the eggs are hatched and the brood larvæ too old to raise queens from the frames that have been supplied.

Now we are ready to start raising queens. Find this choice queen that you have decided was the best in the apiary and put her with the comb she is on in a hive body filled with suitable combs and put it on the old stand. Put a queen excluder over it and set the two stories of hatching bees and scattering eggs, from the choice queen, on top.

If they fail to raise queen-cells when thus fixed up, take the two stories as they are, brood and all, and set them on a new stand, leaving the queen to take care of the field workers. You know the queenless portion will raise queen cells, but they must have eggs from the breeding queen.

After the cells have been sealed up a few days, divide the colony into as many nuclei as there are queen-cells. Each nucleus may be provided with a two-frame nucleus hive and left until the queen begins to lay. Then she is ready for shipment on her own combs, laying in transit as nature intended, without any disturbance whatever, or she may be built up rapidly in the home apiary.

There is no poking of larvæ around which may be of some injury to the future queen, and she is raised in her own natural cell; but, above all, she is not selected out and put in a queen cage with a few workers, with no place to deposit her eggs in the proper, natural way. Certainly no harm can come to her under these circumstances, and it is the only way I would care to receive queens for my own use in the future, if not impractical to get them that way. Even though I have to pay more for them, it will be worth it, considering the losses that often occur in introducing, etc. She is already introduced and in full working order.

Many queens have been successfully shipped caged, but I do not consider it improves them any, and may, especially in long distances, be of great detriment to them.

If I was going to build up a large apiary, I believe I would make arrangements with a good breeder in the South, California or Arizona to raise some good queens in nuclei for early shipment. They could be started off in April and would do very nearly as well as any in the apiary.

Here we cannot do much, as a rule, towards raising queens until the last of May, except to help them to build up into strong swarms. Just for the season's work it is best to get bees and queens where they can be got the soonest, so they can breed up strong enough to gather the crop.

The best queens that have become notable for their honey gathering qualities have always come from places where it has been difficult for the bees to gather honey enough to live. The more difficult the better the strain of bees that are produced by the conditions and the long time of breeding up industrious bees.

In Salt Lake City we have no fields of clover or other field crops. Dandelions come out early on the lawns and a few trees furnish pollen quite early. There are quite a plenty of honey locust trees, but this last season I did not see a bee on them, owing to a cold spell. There are wild flowers over the hills and some scattering bunches of alfalfa and sweet clover, from which we get the most honey. The ornamental flowers last all the season, but I don't know how much honey they produce. Our honeyflow should commence in June, but I did not get much surplus until August this year.

The foreging shows that this place is a good one to raise and improve the **industry** of the bees, as the conditions are right to make them work hard for their living. These same bees put in a prolific pasture would gather a large quantity of honey.

The poor colonies and cross ones should not be allowed to raise drones, but to prevent them from doing so they have to be handled often and all drone comb and brood kept cut out. There will be plenty of drones from better colonies if it is allowed.

For the reason that there is poor pasture in Salt Lake City, there are very few bees kept here; therefore there is little likelihood of queens mating with poor stock drones. I have had very little or no trouble in that way. Utah.

(Our correspondent is perhaps a little too hard on artificial queen-rearing. Doolittle and others have raised many valuable queens artificially.—Editor.)

AMERICAN HONEY INSTITUTE

Assured Purity

Twenty years ago, when the pure food and drug laws were new, and the departments in charge of their enforcement still untrained and poorly equipped with laboratory facilities, most foods and drugs were heavily adulterated. In 1906 the chemical laboratories of the Indiana State Board of Health examined eighty-seven samples of yellow or natural beeswax and found sixty of them adulterated with paraffin wax in quantities ranging from 10 per cent to 100 per cent, while but two out of seventy samples of bleached or white wax were free from paraffin. At the suggestion of the American Honey Institute, Dr. I. L. Miller, Indiana's present food commissioner, recently purchased samples of beeswax from local drug stores, including the chain drug stores as well as those independently operated. In no case were any of the samples found to be adulterated.

Beekeepers have known for many years that honey, once heavily adulterated, has been lifted into the class of splendid foods and now comes to the table just as pure as when it was placed in the comb.

Our Helpers at Washington

American Honey Institute is receiving much help from the United States Department of Agriculture. James I Hambleton, apiculturist of the Bureau of Entomology, is furnishing us with all the bulletins and helpful information prepared by his office. The Bureau of Agricultural Economics, which is especially concerned with the standardization of food products, is asking for the cooperation of the Institute in developing its services. The Bureau of Chemistry is interested in all problems of honey and hopes to develop research projects which will provide more information than that now available as to the chemical nature of honey. The Division of Food Research is keenly interested in developing new uses for honey and, if special funds can be provided, it will undertake extensive studies of the possibilities of using honey as a sweetening agent in many types of foods. The Bureau of Chemistry has already done much work in this field and one of its products—a chocolate honey beverage—has been described by the chemists who made the studies as outstandingly the best drink ever made. The Dairy Division of the Bureau of Animal Industry is interested in the possibilities of using honey in ice cream mixes, and in combination with cheese as a soft spread for breads. The Office of Information of the department advises us that it is alert as to the possibilities of stories concerning the larger use of honey, and especially because of the opportunity the several branches of the department have to extend its use through the application of research to the manufacture of new or better foods.

Safe Reducing Diets

Dr. W. D. Sansum, of the Potter Metabolic Clinic of Santa Barbara, California, is recognized as an authority in the field of nutrition. The studies of obesity and overweight which have been carried on at his clinic have given the medical profession a new conception of the effect of diet upon body weight. The old, and still commonly held, belief is that starches and sugars produce fat and that to reduce weight one should eat little bread, potatoes, sugars and candies. As Dr. Sansum points out, this advice is scientifically unsound, and if too rigorously followed may be dangerous. The Western Dietitian, in a recent issue, prints an important article by Dr. Sansum, pointing out the dangers of reducing weight and showing how to avoid them, under the caption "Ample Starches and Sugars Must Be Used." Dr. Sansum says:

"Contrary to popular belief, reducing diets must contain ample starches and sugars. In general, fats cannot burn properly in the body except in the fire of burning sugar. This principle is well illustrated in severe diabetes, in which the sugars are not available because they are passed in the urine. As a result, the fats are improperly burned, producing the often fatal acetone type of acidosis. If an obese person starves, or eliminates the starches and sugars from the diet, the chief source of heat and energy is his own body fat. Since sugars are not eaten, this body fat is improperly burned and the patient will inevitably suffer from this dangerous type of acidosis. Experiments show conclusively that this acidosis results unless the reducing diet contains at least one part of starch and sugar for each part of fat in the diet and for each part of fat lost as reduced body weight. For each pound of weight lost, the patient must eat at least one pound of starch and sugar.

"These starches and sugars, moreover, must not be taken in a too concentrated form. To prevent constipation, the patient must use fairly large and satisfying servings of the low percentage fruits and vegetables."

This statement is of much importance to the honey industry, for honey is a much superior sugar for every use and particularly for those who are inclined to overweight. If those who follow Dr. Sansum's advice, not to cut out sugar from the diet, use honey, they will secure even better results in attaining and holding a normal body weight.

Aid from the Columnist

Prudence Penny, the home economics expert for the Chicago Herald and Examiner, is much interested in American Honey Institute and in her column is making frequent references to the industrious bees and to the quality of their product as a food both for children and grown-ups. One of her recent stories reads:

"It makes life so much more interesting when there is a goal. The earlier in life a worth-while goal is established the sooner desirable conditions develop for one. The method of the bee may hold a meaning to the parent who is trying to help build a sound foundation for the young family.

Bees, you know, if left to their own device, will spend considerable time during the first weeks of the main honeyflow in building their combs. The ambitious bee farmer hurries the job along by providing them with combs carefully saved from the preceding year, or if he is short of combs, as often happens where much honey is being canned, he supplies his hives with thin sheets of pure wax which are stamped to serve as a comb foundation. The bees then complete the cell building much more quickly, which gives them more time for gathering honey.

"If the parent will help establish standards and ideals, develop health and ambition, the child will do the rest."

* * *

"Use more honey for the children these warm days. Brown bread and honey with a salad of cottage cheese makes a satisfying luncheon for children and grown-ups."

State Market Bureaus Wish to Help

In an endeavor to help the farmer market his products many of the states now maintain a Bureau of Markets. At the suggestion of George A. Stuart of the Pennsylvania Bureau of Markets, the Institute has written the chief of the market bureaus of each state, asking for information as to the work the department is doing, or may find it advisable to do, in promoting the more profitable sale of honey. In our letter we inquired whether the department, working in cooperation with beekeepers, was giving any attention to the inspection of honey

under the provision of the Federal farm products inspection law. We also pointed out the possibility of stimulating a larger sale of honey at roadside markets, which, in some parts of the country, are now profitably operated by the beekeepers. When all the replies are in they will be made the subject of a special report. One letter, however, is so timely that it is reproduced in part herewith:

"Broadcasting station WOS is owned and operated by the state of Missouri, and it might be possible we could through your cooperation work out a program to stimulate the sale of honey either through the jobbers or the further development of the roadside stand, which, as you state, brings consumer and producer in direct contact and eliminates the middleman.

"If you could see your way clear to prepare a three- or four-minute article along this line, we would be glad to broadcast it over WOS at either our 9 a. m. schedule, which we term our 'news schedule,' or at our 12 o'clock schedule. It might be possible that we could also work it in on our night schedule. We could use one of these each week. Would like for you to prepare them so they would be adaptable to Missouri. Kindly give this some thought and if you feel that you can cooperate with us along these lines we would be glad to go into the matter in full detail. As the honey is now ready to be marketed, would suggest that you get busy at once, provided you think the project feasible."

American Honey Institute appreciates the opportunity given it to tell the story of honey through broadcasting station WOS, and we have sent C. P. Anderson, state marketing commissioner, material which he can helpfully use.

"Honey" on Label an Aid to Sales

A base of operations is just as necessary for a scientific institute as for an army in the field, or an exploring party headed for the pole. One of the important things American Honey Institute is doing is to collect all the information available as to the use of honey in manufactured foods. A casual study, for instance, of the nickel and dime candy bars and confections displayed at a single stand in the New York subway, showed five products purporting to contain honey. These candies undoubtedly acquire merit because the word "honey" is the obvious thing on the wrapper. Indeed many well-known foods use honey not only because it improves the quality but because it has a significant part in advertising psychology. The Sawyer Biscuit Company, of Chicago, is widely advertising Honey Flavored Graham Crackers, and the billboards carry an attractive picture of a happy child under the caption "Live in the Land of Milk and Honey." The president of the company, in writing the Institute, says:

"Honey holds its own particular niche in the baking industry, and in advertising as we do it is a pleasure for us to give this product just recognition."

It will be most helpful to our work if readers of American Bee Journal will send to the Institute labels of locally manufactured and sold products purporting to contain honey, and in a similar way all advertising material which stresses the use of honey will be helpful.

What Is Honey Bread?

Many fine foods have the honey name. The reason is easy to find. Honey has always meant perfection in flavor and food value. The biblical references to milk and honey and to the sweetness and goodness of honey are supplemented by the Mother Goose tale of the queen who was "in the parlor eating bread and honey." Today honey crust bread and honey cookies are valuable brand names, indicating as they do the use of honey in the formulas. There is a question, however, as to just what honey crust bread is. The food officials want to know in order that they may protect the consumer who buys honey products because he likes honey or has been told by his doctor that while other sugars are not good for him he can use honey as a sweetening agent, and as well that they may help the honest manufacturers who use honey, to meet the competition of the adulterators, who trade on a honey reputation but use invert sugar in their formulas.

The usual rule is that to carry a definite and distinctive name, a food must contain enough of the material named to impart the characteristic qualities of the ingredient. Vanilla wafers must be made with vanilla, not an imitation. Butter pretzels must be made with butter, at least 10 per cent in the state of Pennsylvania. Strawberry ice cream must contain and be colored with strawberries.

There have been no rulings on the subject of honey products, and neither baker, beekeeper nor bread eater knows how much honey should be spread on honey crust bread or added to the formula of honey cakes and biscuits.

The laws are adequate. The regulations in most cases are definite with respect to common foods. But honey products are still unregulated, and the situation from every standpoint is worthy of study and final action. No other method will ever insure the purchaser that the honey brand name means what it should. American Honey Institute offers its services to the food authorities who are earnestly trying to enforce the laws. If it is possible to determine how much honey is necessary to develop a characteristic flavor and what quantity should be used in sweetening a candy bar, the Institute, cooperating with bakers and confectioners, food officials and the honey interests, may perhaps help to draw up definitions and standards that will be of great and permanent value.

The Problem Solved

Many states now have a Bureau of Markets which studies ways and means by which a better market can be created for farm products. George A. Stuart, in charge of the bureau for Pennsylvania, not only studies production figures and market conditions but he sets up the machinery to do the necessary work of eating the surplus. On a recent visit to the state capitol at Harrisburg, Dr. Barnard told Mr. Stuart of the plans of American Honey Institute and asked his cooperation. As a result of that visit the following letter came from Director Stuart:

"I believe in your present capacity you have a very interesting piece of work before you, as the marketing of honey is not on a firm business-like basis in any state as far as I know. In other words, honey is coming into its own. Without doubt a larger amount of honey would be used if a definite program of advertising could place before the people the many uses to which honey is suitable. For instance, a party of us, including three from Pennsylvania and six from Maine, went on a hunting trip last November. In the past it had been hard for us to select something sweet that would meet with the approval of the entire party. We had tried all kinds of cookies, crackers and marmalades, and even pies, but when placed on the table in camp they would meet with the approval of only a few in the party. As we had no suitable container to store the sweet goods, the fancy cookies, crackers and cakes would become musty and be wasted. Last November three five-pound pails of honey were taken into camp, along with cookies, cakes and pies, but the honey was the only thing approved by all the party. The honey was so popular that fifteen pounds was eaten on baker's bread and butter, and very few of the fancy cakes and cookies were even touched. We had estimated the quantity of bread needed from previous trips into this camp, but because of the increased desire for bread and honey, we were forced to double our order for bread.

"I am telling you this as I feel it will be of interest to you in your present capacity, and honey can be taken into hunting camps during the

hunting season with very little advertising."

If these suggestions can be carried to the thousands of hunters who are planning to fish and hunt next fall, and to the great caravan of vacationists already rolling over the highways in search of health and pleasure, honey will be the spread of millions of slices of bread and a new joy will come into life in the wide open spaces.

Selling Experiences

By Charles R. Mott

No matter what is bought, all of it is advertised and well named. In my over forty years of experience as a miner, I have found this true of all materials which have passed through my hands. The newer the goods, the more distinguished the name. If it is belting, the brand is always in large, bold letters. Car wheels, or shovels, or picks, it is always the same.

Everything has its name, except the lowly potato, and it always has a prefix. But when it comes to honey, it is generally just honey. The producer's name is usually all that accompanies it and often that is printed in small type, as though the producer was ashamed of his product.

I had to choose one of the time-worn labels that are usually furnished. The brand name did not show up well, but the word honey was in very large letters. I shall change all that on my future labels. They will be individual, with pictures, something that brings my honey to people's mind, not just honey.

I use catchy display cards, such as "Eat Desert Bloom Honey, None Nicer"; "Desert Bloom Honey Is Sold Here"; "Desert Bloom Honey Best with Breakfast Foods," and several others.

Next, I keep a supply of samples of honey in glass jars and never let a prospect get away without some honey. I find it pays, for the sample is tasted and next asked for when honey is bought at the store.

By this method I have built up a trade with retail merchants for a hundred miles each way from Quartzsite, Arizona, east, west and south. My mail order trade has gone west to Los Angeles, and east and north to Denver and Chicago.

My advice to all beekeepers is, "Give your honey a name, if possible suggesting the district in which it is produced, and use display cards. They cost only a few dollars and take but a little time." Put up the honey to suit the trade, and last, but not least, boost your product to everybody. Arizona.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

ROBBING—FEEDING

1. Can you tell me how I can stop bees from other apiaries from robbing mine? I only have ten colonies, and the last time I extracted (about July 22) I had several sections in one colony that were not quite filled and capped. I left those in an empty super on top of another colony for about ten minutes, when I noticed it. This must have started them, for from that time on I have been unable to stop them. They have robbed out two colonies for me already. But one of these was queenless and the other either has a drone-laying queen or laying workers, for they have two sections full of drone brood. How can I tell by looking at this brood whether a queen or laying workers did it? If I could find the queen, would it pay me to introduce a new queen this late in the season? These robber bees come sometimes about 6 o'clock in the morning just like a swarm, and make more noise than a swarm. They seem to attack all the colonies at once, or most all of them anyway. I cover the entrances with grass, which seems to stop them to some extent for that day, but they come back in a day or two, and there are always some flying back and forth in front of the entrances, trying to slip in.

2. My colonies are rather light in stores and I have been feeding some of them sugar syrup in friction-top pails with holes punched in the top and inverted over the frames, with an empty super over them. I always put these pails of syrup in for them about sundown, but the robbers seem to bother the ones I am feeding the worst; they must smell the syrup. These colonies are in eight-frame hives two stories high; they all have at least six frames of brood and both stories full of bees. I have been keeping the entrances closed down to two or three inches wide, but they get too warm and hang on the outside. Sometimes when I cover the entrances with grass for an hour or so, then take it away, I find a hatful of dead bees under this grass. Is it robber bees they have killed? Would it work if I make a trap on a hive with honey in it, and no bees, so that all these robbers can go in, but cannot get out? Can I take the hive when it gets full and unite it with another colony by the newspaper method, or would they go back where they came from after being confined for several days? I have put carbolic acid and some other things on fronts of the hives, but they do not seem to care for that. They even come when it is raining.

3. When is the best time to feed syrup, when bees must be fed, and how should I mix it? What do you think about these entrance feeders for this time of the year? If I could use some kind of an entrance feeder it would save me from opening the hives and disturbing the bees when robbing is so bad. There are two apiaries within a quarter of a mile of mine and several more a little farther away.

4. Do you think it is the way people handle their bees that make them so bad to rob? Mine do not seem to rob each other, as I have put flour on them and tried to see if they were my own. Mine are all three-banded Italians and have good Italian queens. Do you think it pays for so many neighbors this way to still keep bees? Fifteen or twenty of us here within a mile square have from six to forty colonies, only one having as many as forty colonies. There seems to be pasture for them, too, as several of mine made over one hundred pounds each. WISCONSIN.

Answers.—1. To tell you all there is to say about prevention and cure of the robbing habit would require a great deal more space than a single letter. In our "Hive and Honeybee, or Langstroth Revised," we have five pages devoted to it. But I can say in a few words that the main requirement for robbing prevention is to close the hive as promptly as possible after removing the honey and reduce the entrance of it, often placing some fine grass to cover what entrance is left, after the robbers have quit. The bees of the colony station themselves in the grass and seize the robbers that come. But this cannot very well be done in hot weather. However, if you do not keep the hive open long, you will not have much to fear, unless you spill some honey. To stop robbing, place the hive in the cellar for a while. It is much easier to prevent robbing than to stop it after it has begun. A queenless colony is always in great danger of being robbed, in times of scarcity.

You cannot tell whether the laying is from a queen or from workers, except that the queen usually lays her eggs in more regular form than the workers, for they lay haphazard, very irregularly. Searching for the queen is the only way to make sure, unless you find workers in the act of laying, which happened to me a number of times. If you find the queen it will pay to put in another promptly.

2. I see that you have already tried some of the methods that we employ to prevent and stop robbing. You must have very extraordinary case of it. I would recommend that you reduce your colonies to a single story and stop feeding them until the robbers lose the habit of coming. Make sure that all your hives are well closed in the joints. If they are not well closed, use moist clay to fill the crevices. The dead bees you find in the grass are probably robbers that they have killed. You cannot do a good job catching robbers the way you suggest, and they would be sure to go back home when released.

3. The best time to feed syrup for winter is in September, after the crop is ended. Mix two parts of sugar with one part of water, and do not use entrance feeders; they promote robbing. Put the feed on late in the evening, after the bees have retired.

4. I do not think it is the way your neighbors handle their bees that makes them rob, but rather the way you started to handle yours in times of scarcity. Probably there are too many bees in the vicinity for the sustenance of so many colonies, but if you secured one hundred pounds per colony it is not a sign of short pasturage. Increase your care and avoid opening the hives in days of scarcity.

USING EQUIPMENT FROM DISEASED BEES—PLANTING SWEET CLOVER

1. I had American foulbrood three years ago and have a couple hundred frames that are perfectly dry and clean. Is there any danger in using these frames without cleaning them with lye water? Which is the best method in cleaning such frames which have a little dried wax on them? Can bees get the disease again by using dry combs which have been in a diseased colony but never had any brood in them?

2. What is your experience with sweet clover, or what do you learn from it in general from over the country? Does it yield every year? Would it pay to sow both yellow and white?

3. I would like to buy some two-pound packages for the fall flow. Do you think it would be safe to have them come in this hot weather? ILLINOIS.

Answers.—No, it will not do to use dry

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combs from American foulbrood colonies, even if they are clean and have never had brood in them. They might be all right, but also might renew the disease. The best way to do is to treat them with formalin solution or melt up the combs.

2. Sweet clover is one of the very best honey-producing plants. Besides, it is a soil renovator and should be used by farmers on all land that needs to be restored to fertility. Its immense roots pervade the soil and keep it from washing. It adds to the humus in great degree. As to its yielding honey every year, I would not advance this much, although it appears to do so in Manitoba and the Dakotas. But there is no plant that will yield every year if the season is wrong. I would sow Hubam and biennial both, but the biennial is the more popular. Yellow is good, but does not last as long as the white.

3. I could not say whether packages sent in hot weather would come through safely. Much depends upon the manner of packing. Ask your shipper whether he will guarantee safe arrival. He should know, better than I.

TRANSFERRING BEES

On page 306 of your June Journal, Mr. John Gray explains the transferring of bees. The comments and explanation leave me to wonder just how many ways are the best to transfer bees from a box hive to a standard hive. Personally, I think a clean-up job is best.

Last winter I bought a few colonies which were in the old-fashioned plank hive which had the cross sticks in the center, the hive being made of four 12-inch planks nailed together, making a box about three feet high.

When the time came to transfer the bees, which was in fruit bloom, I arranged a regular standard hive with eight sections containing brood foundation, leaving two frames without foundation, and placed this hive in good reach of the old hive. I then puffed a few puffs of smoke in the front of the old hive, rapped it on the sides a few times, and then laid it down on its side with the bottom about three or four inches from its old entrance. I then put the standard hive on the old stand, with top on just like it was complete. Next I pried loose the top to the old hive just enough to get smoke into it and began to puff smoke in. This started the bees to the other end, and with a slight tap on the standard hive the bees began their march into the new hive. I continued to smoke them from the top and far end until practcially all had gone out and into the new hive.

When laying the old hive down, be sure that the comb is hanging vertical, which eliminates mashing the bees, should the comb break and fall, which will be the case when you begin to cut it out. When the bees are well out and into the new hive, I pry off the side of the old hive, cut out the honey or wax, placing it into a container to be used by the bees in their food. The brood is cut in squares to fit the frames and should fill about the two that are left empty; these are tied in with strings, placed in center of the standard hive; put your top on, take your old hive off about fifty yards, spread out your comb so the bees can get to it, and the job is done.

Of course, in a day or two you get the old comb up and make wax, destroy the old planks from the box hive, and then in thirty days you can make two hives, or put on super for honey. This is a quick way and you finish it, too. B. C.

Answer.—Your way is good, but if you were to do this transferring among other colonies of bees, and there was the least disposition to rob, your colony would be robbed very promptly. Our method, given in "Every Step in Transferring Bees," gives similar instructions, but with the transferring to be done in a room, honey house or other safe place. Some fifty years ago there was a large amount of this work to be done and a beekeeper who could do this for his neighbors, without causing any trouble, was sure to succeed and to get a good reputation as a worker in the bee business. Most people now think it is too much trouble to transfer combs but we never allowed any worker combs to be lost, even though we were manufacturing comb foundation.

MOTHS BOTHERING COLONY

I have a colony of bees that has never done any good, and today I found they are full of moths. I was going to unite this colony with another a little later, but now I don't know whether to or not. Is there any way I could save the bees and unite them with this other colony and destroy the old combs, or could I kill the moths some way and save the honey to use for feed? I have a strong colony of Italians that are robbing this moth-eaten colony. I don't suppose they could get the moth that way, could they? I don't care so much about losing this worthless colony, but I want to know how to keep the moths out of my two good colonies. I have them in ten-frame hives and I have a shallow frame super about four and one-half inches deep full of solid honey to put on each; that should be enough to take them through the winter, should it not? ILLINOIS.

Answer—That colony which is full of moths has evidently been queenless for some time; that is why the moths invaded it, for moths can never destroy a colony of healthy bees with a good queen. I do not believe you can do anything with those bees except unite them with another colony. Take out the combs, destroy the moths and, after night, unite those bees with another colony by putting their hive on top of it, next to the brood chamber, without any bottom board.

The shallow supers full of honey will surely be ample to supply your bees with their winter food if they have as much honey in their brood chamber as is common in a Langstroth hive at the end of summer.

If the moth-ridden combs are not altogether eaten up, you might melt what is left of them into beeswax.

CARING FOR COMB HONEY

1. Should comb honey be taken off the hive as soon as filled, or should it be left on till fall?

2. How is the best way to store comb honey? Could it be put in boxes and nailed shut, or does it need air circulating through it?

3. Will moths destroy comb honey? If so, what can I use to keep them away from the honey?

4. What price does No. 1 grade and fancy grade sell for? I sold it for 15 cents a pound last year, but was told that I should get more for No. 1 and fancy grade.

5. In selling extracted honey, do you weigh the container with the honey, and does the price include the weight of the container?

6. What price does extracted honey sell for by the pound?

7. When extracting honey, should it be put in jars at once, or should it stand for a while so as to settle it?

8. Should it be warm when it is put in the jars? NEBRASKA.

Answers.—1. It is well to take comb honey off the hives as soon as it is sealed by the bees, because it looks cleaner if removed before it is "travel stained" by the bees.

2. We usually put comb honey in the shipping cases as soon as it is ready, after cleaning the sections from all propolis and burr-combs, if any.

3. If there are any moths about, they will surely damage your comb honey unless it is well protected. If there is any doubt about it you had best treat your comb honey before boxing it. The eggs laid by the moths are small, and the little worms, when hatched, can go through a very small crack. We have very few moths here, because we do not leave any combs exposed where they can breed. If you feel that your combs of honey need to be made immune

before boxing them, buy some sulphur and burn it in a metal vessel, in the room where the honey is, before it is boxed. A pound of sulphur will kill all the moths in a room and also all the flies. A little more expensive method, but a very good one, is the one given on page 296 of our June number, by Roger C. Smith of the Kansas State Agricultural College, by the use of calcium cyanide. Read that article. It is worth while.

4. Fifteen cents per pound is low, at retail, for No. 1 or fancy comb honey, unless it is sold at wholesale. We get 20 cents. At wholesale we may figure 20 per cent off.

5-6. In selling extracted honey, you should get 75 cents to $1.00 for the five-pound cans at retail. The honey is weighed net. That is why you should charge more per pound. The ten-pound cans should bring $1.50 to $1.80 at retail. In bulk it should retail for about 15 cents. At wholesale in large quantities the good extracted honey should bring not less than 10 cents, or 20 per cent from the retail price, if sold in small packages.

7. It is best to put honey in large tanks when it is extracted and put it up into retail packages as fast as needed, or before the selling season.

8. It is much easier to put up honey when warm, but it is not absolutely indispensable. If it granulates, it may be necessary to melt it over a very slow fire, "au bain-marie," which means over hot water.

FERTILIZATION OF THE EGG

Could you inform me if the freshly laid egg of the bee has been examined microscopically to determine the presence of spermatozoa? If the queen is laying rapidly, very little time would be left for the spermatozoa to penetrate the outer skin of the egg, and it would be interesting to know if any signs of it had been detected on the external surface. I suppose there is no chance that the worker bees take a hand in the matter by destroying the spermatozoa on the eggs in drone-cells.

TASMANIA.

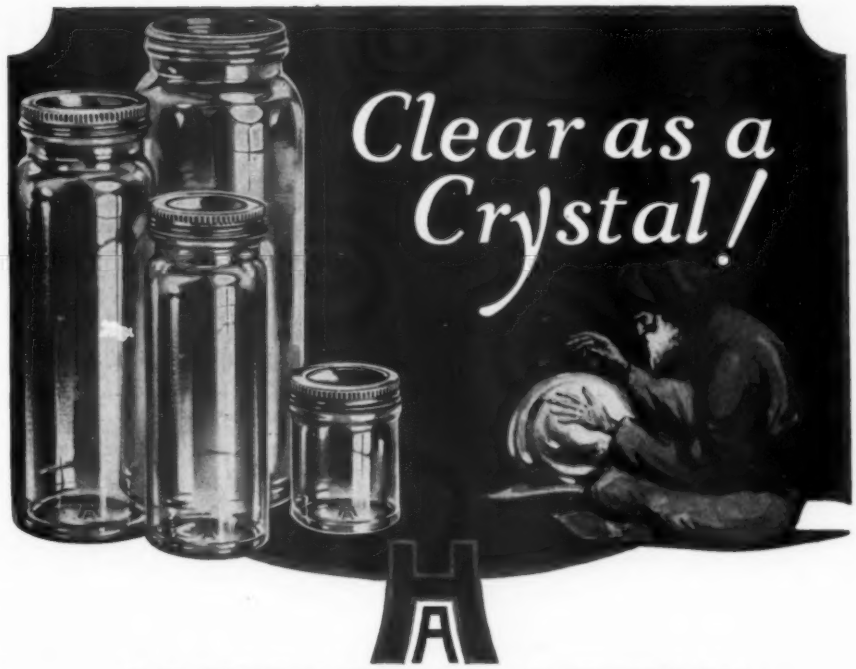
Answer.—Yes, the freshly laid eggs have been examined microscopically, and whenever they were female they contained spermatozoids. Our book, "Langstroth on the Honeybee Revised by Dadant," contains an account of this at paragraph 139. The mycropyl, or opening in the end of each egg through which the spermatozoid enters the egg, is shown in Girard's book, "Les Abeilles," page 117, and by ourselves also in the early editions of the "Hive and Honeybee." Very probably some spermatozoids might be accidentally found on the outside of eggs. But there is no opportunity for worker bees to destroy the spermatozoids to change the egg into male.

HOW TO VENTILATE THE HIVES

I have read several items on ventilation for bees. All of my strong colonies had from one pint to one quart lying on the outside last night, as it was warm. They are in eight-and ten-frame hives and have no means of ventilation except through the entrance. Do you think they need more? Some of them have three supers on. If they need more ventilation, what is the best method—raising the hive from its bottom board, or dodging the supers, or propping up the hive cover an inch or so?

ARKANSAS.

Answer.—We usually raise the hive from its bottom, in front, putting the entrance block under the edge. Sometimes we use a block on each side. We have used as high blocks as three inches. If the blocking up of the hive is not sufficient, we sometimes stagger, or shift or, as you call it, dodge the supers an inch or so. But we prefer not to do this if we can help it, because it



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gives the robbers too good a chance to get at the honey when the crop stops, and you will notice that the bees always move the honey away from an entrance thus made in the supers. Another objection is that it causes some bees to become accustomed to going back and forth through this temporary entrance, and it annoys them a great deal when it is done away with. Usually a very high entrance, in front, is sufficient. At any rate we give them enough room to enable them to stay within the hive whenever there is honey in the fields, for at that time most of the field bees are out all day long and the hive is crowded only at night.

WEIGHT OF SUPERS—UNITING—AGE OF COMBS

1. How many pounds of honey on a ten-frame shallow extracting super when full? Will a full-depth ten-frame extracting super or hive body hold twice as many pounds of honey?

2. To unite two colonies of bees, place the queenless colony on the other hive body with frame of honey (no brood) to live on for thirty-six hours, with wire screen between the two colonies; then open a small hole so one or two bees can pass at a time and unite in that way. Will the queenless bees kill the queen in the lower hive body, or would the queen have to be put in cage and introduced the same as in a queenless colony?

3. How old should the comb be on the brood chamber before replacing it with new combs?

4. What is the best book on breeding queens to requeen your own colonies?

5. Are the leather-colored Italian bees, three-banded, better honey producers than the golden Italian bees, or is there any difference? WEST VIRGINIA.

Answers.—1. A ten-frame shallow extracting super should contain, when very full, forty pounds of honey. But in many cases the amount is not much over thirty pounds. Full-depth combs would, of course, contain much more, but the average amount would not be much over sixty pounds.

2. The method you give is good. We do not believe that the queenless bees would kill the queen of the lower colony, but it might be safer to cage the queen as you suggest. Much depends upon what time of the year it is. If the bees are making honey, there will be little danger of trouble.

3. Much depends on whether many drones were reared in the colony, as drones soil the combs very much. Much depends also on whether the combs were used for breeding or for storage. We have often kept combs twenty years or more, in the brood chamber.

4. The best books on queen-rearing are Doolittle's "Scientific Queen-Rearing" and Pellett's "Practical Queen-Rearing." But almost any of the textbooks will give you instructions on how to rear queens for your own use.

5. The leather-colored and the golden Italians may be equal in ability. Much depends upon how they were bred. We have always preferred the leather-colored. They are nearer the average Italian stock in Italy.

GETTING INTO BEEKEEPING

I have read the article written by Josephine Di Lullo in your July issue.

Now is this true of all small beekeepers? My husband has now thirty colonies of bees. The state inspectors were here yesterday and we have a clean slate. He intends to gradually increase his apiary, making beekeeping his only occupation in three or four years' time. We have all the government data and several good books which he studies religiously. Is it possible for a man to start out this way and gradually make this his means of living? He works in an automobile shop, but intends to quit as soon as he gets enough bees. He has kept bees since a boy on the farm near Alton, Illinois. Last year, from about eight or nine fair colonies we got twelve hundred pounds of clover honey and averaged around

20 cents a pound for it. Is this all right? Please advise. MICHIGAN.

Answer.—The article to which you refer, on page 339 of our July number, takes a pessimistic view of the beginner. But they are not all nuisances. My own father, after a number of failures in Europe, started with two colonies of common bees in box hives in this country and often said that he never spent anything on those bees that they had not paid for beforehand. So you see not all beginners prove a nuisance in beekeeping.

With careful study and determination, with foresight and not too much enthusiasm, one can succeed as he did.

Let your husband keep on as he has been doing, and the time is not far when he will be able to lay aside all other work and devote himself to the bees entirely and make it pay, besides finding it a healthy occupation.

SELECTING A BREEDING QUEEN

I have a young queenbee which I purchased late this spring. This queen was given to a very weak colony of bees and now the colony is strong and has two supers nearly full of nice honey. These bees are very gentle and don't offer to sting; I can handle them without any smoke even. This is the only hive I have of real Italians. I have thirty colonies and some of these are awful to sting and just boil over the top when I open the hive. Wouldn't this queen be all right to breed from to requeen all my colonies this fall? I have a queen-rearing outfit. I know these queens wouldn't be purely mated, but they will beat what I have. KENTUCKY.

Answer.—Yes, of course that queen will do to breed from. You will have a number of mismatings, but the young queens that you will rear will produce pure drones and the next generation may be all purely mated, especially if you have no neighbors close, for you can avoid rearing drones from your other stock by replacing all their drone-combs with worker-combs, and giving plenty of drone-comb to one or two of your best colonies.

WHAT SIZE EXTRACTOR?

1. Will an extractor suck or throw pollen out of the comb if there should be some in the combs that are to be extracted?
2. What size extractor would you suggest for about thirty-five or forty colonies?

I've always run for comb honey and don't know anything about extracting, and will thank you for the above information. ILLINOIS.

Answer.—1. No, the honey extractor cannot remove the pollen from the combs, and it is a good thing, for if it could do it we would harvest quite often a mixture of honey and pollen, or else we would have to leave out all the combs containing pollen.

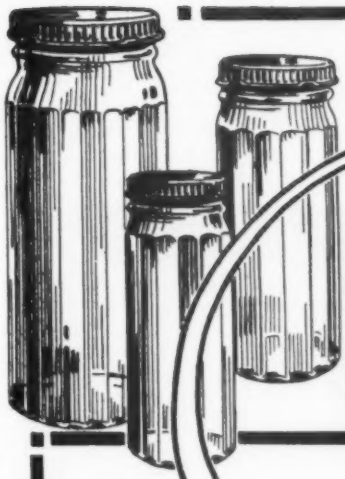
2. For a small number of colonies, if you are not in a great hurry, the small size extractors for two frames will be sufficient, but you must be sure to get them with baskets large enough to extract your combs.

TO PREVENT GRANULATION IN GLASS

I would like to know how to handle honey that I put in glass jars, to keep it from candying. Should I heat it before I put it in? You know candied honey doesn't look well in glass jars. IOWA.

Answer.—Yes, to prevent honey from granulating it should be heated for a while up to 140 to 145 degrees. If you heat it much more it will lose some of its good flavor, and if it is overheated it will acquire the taste of molasses.

You had best keep it also in a warm room where it will not get too cold, say above the freezing point. With these precautions there will be no danger of its granulating.



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Display your Honey Perfectly

Dependable Service

On Standard Sizes

Our fluted honey jars are made as per specifications of Standardization Committee of the American Honey Producers' League

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WORKING YOUR WAX INTO FOUNDATION FOR YOU FOR CASH AND DITTMER'S NON-SAG BROOD FOUNDATION

We are now able to furnish a Non-Sag Brood Foundation that will give absolute satisfaction. Our MR. E. H. HANSELMAN has for several years been testing and experimenting along this line, and the result has exceeded our most sanguine expectations. Bees take to it like ducks to water, in preference to other makes, in all cases where it was used side by side with other makes of foundation. NOW IS THE TIME to send us your wax to work for you for next season. Write us for samples and prices, and we will tell you more about it.

We can also furnish you THE BEST HIVES AND SECTIONS MADE IN WISCONSIN, at best prices, in any quantity. We furnish a full line of supplies. Write us for price list.

GUS DITTMER COMPANY, Augusta, Wis.

Today's Big Value in Honey Containers

THE Wheeling five-gallon or 60 lb. Square Can is one of the most popular honey containers on the market today. Top and bottom are double seamed and soldered, making a leak-proof container of exceptional strength. Furnished with 1¾ in., 2 in. and 2¾ in. screw cap with cork or paraffined pulp-board liners in either 107 lb. or 135 lb. tinplate.

We are also in position to furnish all sizes of friction top honey and syrup cans. Let us quote prices on your requirements.

Wheeling
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Meetings and Events

Southern States Meeting and Conference at Texarkana

For years, various men and interests have tried to line up a group of southern states to hold meetings in succession and agree to dates, places, programs, etc., well in advance. This summer the plan was fairly well carried out, although the states did not cooperate as well as could be wished, nor did the leaders cooperate to the extent they should have. All in all, however, a great deal was accomplished and a good start made.

Just a few points need to be mentioned: Cooperation between the inspection departments; cooperation between the shippers and these departments. If your state is apparently free from disease, do you know how the neighboring state is handling the disease situation? How about a diseased area on the border of two states?

This season the express company sent a representative, Mr. Boles, to every one of those meetings, and he gave an address at each, giving the viewpoint of the express people. He met shippers who thought they had grudges and went to the bottom of things with them. He took part in the meetings and helped to carry on. This alone is worth while—getting the beekeepers and express company together. I personally know of shippers with papers in the hands of attorneys with instructions to bring suit, who withdrew those papers after meeting Mr. Boles and going over the matter with him.

The cooperation of the Kellogg Company should also be mentioned. They recently inserted a full-page advertisement in Holland's Magazine, advertising southern honey. The cooperation of the American Honey Institute also deserves mention.

Most important of all, however, is the cooperation and support of the Southern Bee Culture Field Station, now located at Baton Rouge and quartered at the Louisiana State University. This institution has just been established and is at the service of the beekeeper. It is up to the southern beekeeper whether he gets more use from it than others of the United States. They are now studying the matter of standardization of shipping cages. This is something now wished for especially by the express people, who have claims to settle and space to collect for in handling these packages. If a standard size and shape can be agreed upon, the result will overbalance the effort. Let us cooperate with the express company and the field station in this matter.

A study of honey plants is also being made. Ask the average beekeeper what plant his honey is coming from and see what answer you get. This field station is willing to make a survey of the honey plants, the time they yield, the amount, the effect of atmospheric conditions on both the yield of plants and the flight of bees. They wish to do this not only in Louisiana, but in all southern states. Give them your help through this Southern Conference.

The officers for next meeting are: W. E. Joor, Dallas, Texas, president; Jes Dalton, St. Francisville, Louisiana, vice-president; W. E. Anderson, State Entomologist, Baton Rouge, Louisiana, secretary. The next meeting will be held at Baton Rouge next February, just before Mardi Gras, so delegates can avail themselves of the cheap rates. The exact dates and particulars will be given later.

This is a southern organization to help the southern beekeeper. Such things as cooperation with the express companies, advertising southern honey, southern honey plants and the field station are surely your problems. Give this matter your thoughtful attention and plan to be with us at the next meeting and get the opinion of the southern leaders on the above and on other problems.

Jes Dalton.

Fifty-first Annual Meeting of Texas State Beekeepers' Association, July 31-August 1, College Station, Texas

The fifty-first annual meeting of the Texas State Beekeepers' association was noted for the large number of new members in attendance. As the old beekeepers are removed by death or feebleness of health their places are rapidly filled by younger and better trained men. The beekeeping industry of Texas is fast going into the hands of young men who have received their training in A. M. colleges and who served under the famous beekeepers of the Southwest.

The first number on the program contained a feature which was new to the association work. The notable achievements in beekeeping during the last year were reviewed by the members of the inspection force. The achievements of Quinn and Laidlaws, a review of Dr. Parker's work on pollen subsitutes and the story of Dr. Lloyd Watson's discovery of queen mating were among the topics.

The chemistry of honey was discussed from the standpoint of the beekeepers by Prof. B. C. Jones of the teaching force of the college.

H. B. Parks, of the Experiment Station, told of the newly introduced honey plants now on trial at the state laboratory.

The program for the afternoon was headed by a paper on the relationship between the amateur beekeeper and the commercial man. This was given by T. W. Burleson, Waxahatchie.

T. P. Robinson, Bartlett, Texas, discussed the problem of the poisoning of bees from arsenicals applied to cotton. He put forward and presented the data to substantiate the following theory: Bees are poisoned by arsenicals applied to cotton only when honeydew or sweet mixtures are present on the cotton leaves.

H. E. Coffey, Whitsett, spoke on the organization of queen breeders and package shippers, and issued a call for a meeting of that body.

Mr. W. G. Boles, of the American Railroad Express Company, presented a paper on the relationship between his company and the shipper of bees.

At 8 p. m. the annual Beekeepers' Buzz was held at the residence of Dr. and Mrs. F. L. Thomas. This is the annual "get together" of the beekeepers. An evening of enjoyment was provided by Mrs. Bilsing and Mrs. Thomas.

The program Wednesday morning consisted of an extensive review of the achievements of the inspection force. The program was conducted by Dr. Thomas and his corps of assistants.

The regular meeting adjourned for a business session, during which E. W. Edwards, Grandview, was elected president; Clarence Delaney, Seguin, vice president, and H. B. Parks, San Antonio, secretary-treasurer. Among the resolutions adopted was one to continue the membership of the Texas Association in the League.

In compliance with a call of H. E. Coffey, the queen and package men met at 1:30. They formed a permanent organization and adopted a constitution and by-laws. Every queen and package man in attendance at the state meeting joined the new association. A resolution was adopted requesting other states to form similar associations, and suggested that a section of the American Honey Producers' League be formed to care for this group of beekeepers. J. D. Yancey was elected president; H. D. Murry, vice-preisdent, and H. E. Coffey, secretary.

H. B. Parks,
San Antonio, Texas.

British Columbia Exposition

Mrs. W. H. Turnbull, Sullivan, is secretary of the apiary products section of the British Columbia Provincial Exhibition, to open at New Westminster on Labor Day, September 3. The British Columbia Honey Producers' Association will stage the exhibits, which promise to be fully equal to the best of what has for years been a record section.

Last year beekeepers from interior points of the Province scored decisively and drew attention to the

BOOKING ORDERS

for high-grade three-banded Italian bees and queens. 2-lb. package with select untested queen, $4.50; discount on quantity. Select untested, $1.00, $10.00 per dozen; select tested queen, $1.50. Inspector's certificate with each.

J. ALLEN, Catherine, Alabama

MOORE'S STRAIN

Away back in 1879 I commenced rearing Italian queens with the object of improvement constantly in view.

By careful selection during all these years I have succeeded in producing a strain of three-banded, leather-colored Italian bees, known as MOORE'S STRAIN OF ITALIANS, which has won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.

Mr. A. K. Whidden, San Jacinto, Cal., says: "In 1913, 80 per cent of the bees in this district died of European foulbrood. I had an apiary of 60 colonies headed by daughters of your queens in which I did not lose a colony, and in 1914 they made 360 pounds per colony.

"In 1917 I bought 12 queens of you and introduced them to diseased colonies. Four of them became too weak to recover, and they all got rapidly worse until it looked impossible for any of them to recover. In eight of them, as soon as the young bees from your queens began to hatch, the disease began to disappear. They cleaned up and stayed clean."

I am now filling orders by return mail.

Untested queens, $1.00; 6, $5.00; 12, $9.00. Select untested, $1.25; 6, $6.00; 12, $11.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE

MORGAN, KENTUCKY

HODGSON'S RADIAL HONEY EXTRACTOR

will extract your honey on the cool days when the bees are not flying; so that it is not so necessary to have a bee-tight extracting house.

For circular, write to

S. P. HODGSON & SONS

NEW WESTMINSTER,

British Columbia, Canada

Golden Queens and Banded Bees

Untested queens	$1.00 each
Tested queens	$1.50 each
Bees	$1.50 per lb.
Nucleus	$1.50 per frame

Bees inspected; free from disease

J. W. SHERMAN, VALDOSTA, GA.

huge possibilities still open for the making of profit pleasantly by cooperating with the busy bee in British Columbia.

The point score for honey provides: For extracted, 25 for color, 25 for brightness, 35 for density, and 15 for flavor. For comb honey the point score is: Absence of popholes, 25; uniformity of cells, 15; cleanliness, 30; thinness of capping, 15; flavor, 15.

British Columbia is especially favored with nectar-yielding blossoms and plants, and the honey production has increased enormously of recent years, though there is still room for more expansion.

The hundreds of acres of additional clover in the reclaimed area at Sumas has increased the scope for Fraser Valley beekeepers, and J. B. Munro, Assistant Agronomist for British Columbia, recently called attention to the strip, ever widening, of clover along the Caribou trail and the opportunity for beekeeping on a commercial scale there.

The British Columbia Honey Producers' Association offers a special prize for the best specimen of honey in the show—a blue ribbon special to be eagerly contested for—and a special for the most palatable dish or confection made with honey as the chief ingredient. The exhibitor scoring most points gets a gold medal and diploma.

The season has been favorable to honey production and the display at the Provincial will, as usual, be unrivaled.

Bee Course at Missouri College of Agriculture Proves Popular

Sixty-eight attended the first summer short course for beekeepers at the Missouri College of Agriculture, July 16 to 18. Registries were from thirty-one counties, the city of St. Louis, and three other states. Four came from Kansas, two from Arkansas, and one from New York.

Special attention was paid to honey in the course, as well as to beekeeping practices. The discussion of marketing was featured.

Speakers on the program included Dean Mumford, Arthur Allen, State Apiarist, Dr. Phillips of Cornell University, J. V. Ormond, Secretary of the American Honey Producers' League, Dr. Parker of Kansas State Agricultural College, Clay T. Davis, Secretary of the Missouri State Beekeepers' Association, Dr. Leonard Haseman, Mr. J. C. Sullivan, and others of the Missouri College of Agriculture.

Tri-State Meeting at Dubuque

The Wisconsin, Illinois, Iowa and Minnesota beekeepers held their annual meeting at Dubuque on July 25-26, at Eagle Point Park, which overlooks the Mississippi. This is a most picturesque park and the scenery alone was worth while a trip to Dubuque.

The meeting was very well arranged by Mr. G. H. Ohmert, and everything went off very smoothly.

While this meeting was not as large as the meetings at Platteville and Hamilton, at the same time it was enjoyed greatly by those present. There was quite an array of noted speakers, which kept those in attendance interested.

Among the speakers were Prof. H. F. Wilson, Madison, Wisconsin; Prof. F. B. Paddock, Ames, Iowa; F. C. Pellett, Atlantic, Iowa; N. E. France, Platteville, Wisconsin; A. L. Kildow, Putnam, Illinois; Prof. Francis Jager, Minneapolis, Minnesota; Mr. J. W. Thompson, Minneapolis; Mr. Boggs, of Wisconsin; Prof. V. G. Milum, University of Illinois; Frank Coverdale and son, Maquoketa, Iowa; M. C. Berry, of Alabama; Mr. Kummer, of Mississippi; James Gwin, of Wisconsin; L. C. Dadant, Hamilton, Illinois.

Among the old-timers was N. A. Kluck, of Lena, Illinois, whose jovial presence added considerably to the enjoyment of many. Miss Mathilde Candler, of Cassville, Wisconsin, was also present.

The first day was devoted entirely to speakers and a demonstration of the uses of honey in fruit drinks by one of the local beekeepers. The morning of the second day was devoted to speaking, and in the afternoon an extended tour was made of apiaries in the vicinity of Dubuque. This tour was conducted by G. H. Ohmert, and among the places of interest was the old Ohmert apiary, which has been in existence for many years.

Mr. Ohmert is to be complimented on the handling of the meeting, for everyone present had an enjoyable time.

Louisiana Meeting a Success

The annual summer meeting of the Louisiana Beekeepers' Association has just elected, as its president, W. E. Anderson, State Entomologist at Baton Rouge, Louisiana.

John St. Romain, of Marksville, is vice-president, and Prof. O. W. Rosewald, of the Louisiana State University, is treasurer.

Professor Nolan of the Bee Culture Laboratory at Washington, who has charge of the new field station for bees located at Baton Rouge, was present at the meeting and gave a description of what this field station expected to accomplish. There were also demonstrations by Harry Laidlaw on artificial insemination of queens.

One of the topics of special interest to the meeting was a discussion of the possibilities of finding markets for large quantities of Louisiana honey. Such an accomplish-

ment should encourage the production of honey as well as the rearing of bees and queens in this state.

The Sixth National Show of Bees and Honey at Crystal Palace, Sydenham, England

Unfortunately our notice of this comes late, since no entries are received after August 22. This show is of interest here, however, since some of the entries are open to competition to the whole world. Prizes to the amount of $1500 are offered.

Class 1 is a competitive exhibit by associations of Great Britain, with a perpetual challenge cup and a money reward. Class 2 is open to the whole world and is for twenty-four jars of honey which must be of the same color, or three or six colors. The rewards are a silver challenge cup and silver medal for first, bronze medal for second, and certificate for third. Cup becomes property of the exhibitor winning it six times in all. The holders for 1926 were Gordon & Sons; 1927, J. S. Leigh.

Class 3 is open to the dominions and colonies only and is for a display of honey on a space 8x4 feet, no restrictions as to labels and containers. Certificates will be awarded.

The other classes and awards are open to Great Britain and local associations only, and include honey, beeswax, bees, mead, vinegar, and beekeeping appliances.

"Cabbages and Kings"

By Homer B. Turrell

BEEKEEPING has been called the poetry of agriculture. For several years now, the farmers have not been making enough money to be inclined to burst into song; the economic tide has been against them and we have been seeing the decay of country life. Campaign orators used to tell us that we should build up our manufacturing industry here so the farmer would get good prices for his products and be enabled to flourish. We have now done that; our industrial plant is one of the wonders of the world, but about all the flourishing the farmer has been able to do was when he put his John Hancock down on a note that mortgaged away the old homestead. Mass production has concentrated the workers in the cities, taking the farmer's best labor away from him at wages that he cannot afford to pay. At the same time, a crew of middlemen have edged in between him and his customers so that what he has to sell must pass through the neck of the bottle. And most of what he buys must come through the bottle-neck from the other direction. This is not politics, or theory, but simply the condition that confronts us.

Industrial England let her farms go pretty much by the board while she manufactured goods for the whole world; she found it quite profitable to do this, and bring in her foodstuffs from abroad. Then came the pinch of war and the ruthless submarine campaign. Faced by short rations, the English people began to wish that they were more self-sufficient in this respect. We, ourselves, are traveling in the same direction and, strange as it may seem with our many fertile acres, we too may soon become importers of the staple food products. In the language of the campaign orator, one might well rise up and ask "Whither are we drifting?"

Since apiculture is so nearly related to farming, it follows that any depression on the farm has its reflection on the beekeepers as well. At present we do not see any of the bee men twanging the tuneful lyre upon the slopes of Mount Hymettus—rather they are cussing at the low price of honey and the high cost of supplies. Can anyone blame them if they do not strictly meditate the thankless muse, but prefer to sport with Amaryllis in the shade?

When we turn to bee literature we find that Mr. Langstroth inserted a good many selections from the poets in his book, "The Hive and the Honeybee"; and they are still there after revision by Mr. C. P. Dadant, but, one may suspect, only on sufferance. In the "A. B. C." edition of 1883, we find plenty of prose poetry, but that is as far as Mr. Root goes. Dr. Miller, in "Fifty Years Among the Bees," in one place plainly said that it was a profit that he was after from his bees. Now Dr. Miller gave up a good position in the city, and came back to the country to teach school at half the salary he was making, in order to be near his bees and attend to them properly. Besides that, at the beginning of his career, he had enough setbacks to disgust anyone except a thorough-going meli-maniac. Can we imagine him, then, in the living green of the lush countryside, under a cloud-piled sky, while a soft breeze from the south breathes on the riot of his rose garden, saying to his bees, "Come on here, you little rascals, and hustle in the nectar; it's money I'm after?" One cannot imagine it; therefore his statement may be taken with a grain of salt. Evidently there was a by-product of health and happiness that could not

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Now

is the time to order honey labels, before the rush begins. We have a reserve stock of over a million awaiting your imprint.

How many do you need?

Honey Selling helps of all sorts.

Our catalogue contains some snappy new designs and we still have the old stand-bys that have been favorites with honey producers for many years.

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A Post Card is all it costs

American Bee Journal

Hamilton, Illinois

ITALIAN QUEENS

For Summer and Fall Requeening

80c each; $9.00 per dozen

R. E. LaBARRE, Box 1042, Tulare, Calif.

Closing Out For the Season

Now is the time to requeen with the best queens at bargain prices. To dispose of the queens we have quickly and close our business for this season we are offering them while they last at the following low prices: One untested, 60c; 12 or more, 50c each. Tested $1.00 each. Safe arrival and satisfaction guaranteed. Health certificate with each shipment.

J. M. CUTTS & SONS

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QUEENS! QUEENS!!

Balance of season at 40c each any number.

I wish to thank my friends and customers in the United States and Canada for their liberal business this season. I hope to give you better service in 1929 than I have in 1928.

C. G. ELLISON, Belton, S. C.

BEEWARE

EXTRACTORS

American Cans and Pails, Glass Honey Jars, Wired Foundation
Catalog for the asking

If you wish prompt service, write

B. F. SMITH, Jr., Fromberg, Montana

GET RUNNING'S QUEENS AND GET HONEY

THEY SATISFY!

The kind we use in our extensive Michigan Apiaries, where we produced 92 TONS of honey last season.

Choice Untested Italian Queens
75c each
Tested, 50c each extra

Write for prices in large quantities. All queens sent from Sumterville, Ala. Address for QUICK service,

DAVID RUNNING

Sumterville, Alabama

FREE PREMIUMS

—FOR—

NEW SUBSCRIBERS

Send for a list of them

HELP US GROW

American Bee Journal

Hamilton, Illinois

be ignored in telling just what Dr. Miller was after. It is likely that both Mr. Root and Dr. Miller preferred to be known as good business men rather than as somewhat indifferent poets.

In this hard-bitten age, writing poetry is thought to be hardly respectable, and certainly not profitable, unless it be in the case of a few ultra modernists who seem able to get by.

The lives of men like L. L. Langstroth, Charles Dadant, A. I. Root, Dr. C. C. Miller and W. Z. Hutchinson should be doubly interesting to the beekeeping student of the Middle West. They began their careers just when the modernized industry of beekeeping was developing, and also they saw a phase of the development of this country that has historical interest—that of the pioneer days. Not only that; they may be said to have created the business as it is known today in tools, management and appliances.

The romance of the invention of the honey extractor and comb foundation will attract the student's attention; and, if he be young, all the appliances of the hive, and the hive itself, will appear to him as close on the border of fairyland, and will hold him fascinated when he encounters them for the first time. As a boy, the writer remembers how puzzled he was when he ran across the abbreviation "fdn" in the A. B. C. for the first time. Probably "Novice" never acted as a telegraph operator, but he came near to some of Phillip's code there.

For the student, the catalogs of the supply houses are simply a continuation of the story begun in the bee books—they bring it down to earth and into the realm of everyday affairs. And the bee journals are the continuation that makes the story complete and brings it up to date. Of course, no thorough-going student of the business would be without either of these aids to his understandstanding.

When Mr. Langstroth invented the movable frame, he made manipulation possible, and from that has come management. A good beekeeper will know pretty well just what he wants to do during the season and how to do it. He will have his schedule laid out and will then adapt it to conditions as they arise, if he is able. When Dr. Miller saw the soft maples in bloom, he knew that he had a certain thing to do, if the weather were favorable. Again, when the first white clover blossoms appeared, another manipulation was near, and so on throughout the season. The beginner with bees should know pretty well a schedule of management that suits his locality; that is saying that he should know a good many things. For this reason, the amateur is often advised to start out in a small way so as to allow his experience to overtake his enthusiasm.

The Romans had an alert two-faced god called Janus. Their enemies could never be certain whether they were coming or going; usually they were coming, with the doors of Janus' temple swinging wide. The young beekeeper should be a little like that; after looking both ways, he should stop and listen, and then look around the corner. At every gain he makes he should dig in and consolidate the position. Bee diseases are not pleasant to contemplate; neither are hybrids, stings, crop failures, spring dwindling, price cutting and swarming, but, like life, they are real and earnest. The bee world is all cluttered up with things other than poetry.

But this need not prevent him from taking a little of the sweet with the bitter. He too can go out into the lush countryside under the cloud-piled sky, and while the soft southern breeze fans the riot of his rose garden he can say, "Well, these things at least are secure." Indiana.

QUEENS ITALIANS (three-banded)

50c

SATISFACTION GUARANTEED

W. A. WHITMIRE, Milton, Fla.

Will Bacillus Pluton Run from This?

A. V. Small, Augusta, Kansas, evidently has found a new enemy of European foulbrood. He suggests, "If you find any European foulbrood in a colony, set a lid from a five-pound pail on top of the frames, put one-half ounce of formaldehyde in the lid and cover with a small piece of screen wire over the lid to keep the bees out of the liquid. See what happens."

We have not yet found European, but wish we could just for fun. Maybe friend Small will tell us what happens.

Queen-Rearing in Outyards

For queen-rearing in outyards, we make a colony queenless and broodless and graft artificial cells in about a half hour which are given to that colony.

In a week we return to count the cells and form nuclei, one to each cell. On the following day the cells are distributed.

This is a sure method, regardless of weather or honeyflow conditions. The virgin, however, must have some honeyflow for successful mating.

A. V. Small, Kansas.

Crop and Market Report

Compiled by M. G. Dadant

For our September report we asked our correspondents to advise us of the total crop up to time report was sent in, and in most localities the crop was completed. In addition, we asked the following questions:

1. Is the honey demand active?
2. What are buyers offering?
3. Please comment on the enclosed price recommendations.

THE HONEY CROP

Throughout the East and as far west as Kansas and Nebraska there was serious complaint of too much wet weather and a delayed honey crop. In many cases the crop did not start until the middle of July, and in some places as late as August 1, with a consequent shortage of honeyflow. In the central Mississippi Valley territory the crop was heavy for a few days, with the nectar coming in very thin, and there was great shrinkage as soon as the bees had an opportunity of ripening it. Many reporters, however, stated that the crop was still continuing, with a prospect of more honey during the month of August, and this too in localities where the crop usually is over with by the middle of July.

In the New England states the crop has been much less than last year, ranging all the way from 25 to 100 per cent. Only a very few, however, reported 100 per cent of last year, more of them reporting 50 per cent or less. Contrary to the August 1 report, New York shows a far shorter crop than last year. The average will not be more than 75 per cent of 1927, and probably as low as 50 per cent. In the southeastern states the crop was very good, not a reporter giving less than 100 per cent of last year, and some as high as 200 per cent of 1927.

In the central states the crop was far shorter than a year ago, Ohio having practically a failure, Illinois, Indiana, Iowa and Wisconsin all reporting from zero to 25 and 50 per cent of the 1927 crop. In Michigan the crop is somewhat better than the other states, as reporters give all the way from 50 to 125 per cent of the 1927 crop, with honey still coming in in some quantity. Indiana and Missouri range the same as Illinois and Ohio, although one reporter in Missouri claims a crop 150 per cent of 1927.

In Minnesota the crop seems to range all the way from 50 per cent to double last year's crop and would probably average the same as 1927.

The Dakotas and northwestern Iowa are having a good crop this year, not a single reporter giving less than 100 per cent of last year, but it must be remembered, of course, that 1927 was a very poor year for the major part of the Dakotas and northwestern Iowa.

In the intermountain territory reports vary considerably. Colorado reports all the way from 25 per cent to 100 per cent of 1927, although the majority of the reporters show probably less than half as much honey as a year ago. Idaho, Utah and Arizona have about a normal crop.

Texas, as usual, has quite a varying report, which ranges all the way from a failure to 100 per cent. The average will probably run about 75 per cent of a crop in Texas, which, of course, will be absorbed within the borders of her own state.

From no states have reports come so discouragingly as from California. Not a single reporter gave any encouragement for a honey crop to equal that of 1927, which already was very poor. Several reports of complete failure and necessity of feeding of bees came through, showing that the amount of honey produced in California will probably be less than in many years.

Kansas and Nebraska, although not heavy producers, are having a very good crop, ranging from 100 to 150 per cent of 1927. The Northwest crop in Oregan and Washington seems to be about normal, and in the southern states of Kentucky, Mississippi and Alabama the crop is quite a little less than a year ago.

From eastern Canada comes the report that the crop is less than last year, possibly about 75 per cent. In the western provinces the crop is unusually good, and far better than a year ago. Of course, the Canadian report cannot be complete, because the flow from sweet clover is still on there at the time of writing this report.

Regarding the demand, reports range all the way from low demand to good. The eastern states show a little better demand than farther west, but the reports are a little early for buyers to begin to show activity.

Offers for honey range all the way from 7¼ cents to 9 cents for white extracted and from $2.50 to $4.50 for number one comb. The price of $2.50 is, of course, too low and is given by reporters where no doubt the grading is not as carefully done as in the large honey producing districts.

In regard to the suggested selling prices for honey in 1928, practically every reporter seems to think that the prices published in the August number of the American Bee Journal were about right. Many of them, however, said that while the prices were O. K., it was impossible for them to secure these prices. Nearly 75 per cent of the reporters complained about price-cutters, and many said that it would be a great thing if these published prices could be put in the hands of every honey producer.

In regard to actual sales of honey, one reporter stated that he had contracted four cars of white sweet clover honey at 7¼ cents f. o. b. Dakota territory. The highest quotation for white honey in carlots was 9 cents, the lowest 6¾ cents.

Taking the situation all the way through, the crop looks very much shorter than in 1927, and with a normal demand prices should not rule any lower than last year, and in fact should improve as the season advances.

It is very difficult to say what the new merger of the honey bottlers is going to do. We feel confident that it is going to create a much better demand on the part of the buying public just as soon as advertising can be gotten under way. It may take one year or two years, or perhaps longer, for the efforts of this new concern to be reflected in the price of honey, and, on the other hand, with a short crop as we have this year, the selling propaganda may be felt at an early date.

Because so many reporters spoke favorably in regard to the price schedule in the August number, we are publishing this again, and we think it would be a good plan for each and every reader of the American Bee Journal to pass this information on to beekeepers in his neigborhood, asking the cooperation of just as many as can be reached. It is only by dissemination of information relative to fair prices for honey that the retail market can be influenced and the beekeeper secure prices for his honey to which he is entitled.

(See page 469 for table of prices)

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 7c per word, with no discounts. No classified advertisements accepted for less than 49c. Count each initial or number as one word.

Copy for this department must reach us not later than the fifteenth of each month preceding date of issue. If intended for classified department, it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisements of used beekeeping equipment or of bees on combs must be accompanied by a guarantee that the material is free from disease or be accompanied either by a certificate of inspection from an authorized inspector or agreement made to furnish such certificate at the time of sale.

BEES AND QUEENS

WILL SELL my bee outfit that made 29,000 pounds honey last year and more this year, at 50c on the estimated dollar if sold now. Delbert E. Lhommedieu, Colo, Iowa.

SEPTEMBER QUEENS—Insure your colony. Howell's carefully raised queens build rapidly in spring. Good untested, mailed quick, 60c each.
D. W. Howell, Shellman, Ga.

FOR SALE—Three-banded Italian queens. Untested, $1.00 each; six, $5.50; twelve, $10. Tested queens, $1.50 each.
Robert B. Spicer, Wharton, N. J.

FOR SALE—Water white sweet clover honey, North Dakota's best.
Victor Apiaries, Chaffee, N. Dak.

CAUCASIANS—Bred from very best imported breeding stock. Untested, each $1.50; six, $8.00; dozen, $15.00. Write for prices on tested and breeding queens.
Bolling Bee Co., Bolling, Ala.

STOP, LOOK—To advertise our famous Carolina queens to new customers, we will sell two of our select untested queens at the price of one. Two for $1.25. Will exchange queens for honey. Carolina Bee Co., W. O. Curtis, Mgr., Graham, N. C.

IF you want bees that are gentle to handle, good honey gatherers and beautiful to look at, my strain of golden Italians will please you. Prices: Untested, $1.00; 6, $5.25; 12 to 49, 75c each; 50 or more, 70c each. Health certificate, safe arrival and satisfaction.
Hazel V. Bonkemeyer,
R. 2, Randleman, N. C.

"PRODUCTION-BRED" three-banded Italian queens that will produce real workers. Select untested, 80c each; 6, $4.50; 12, $9.00; 50, $35.00; 100, $60.00. Virgin queens 50c each. Satisfaction guaranteed.
A. E. Crandall, Berlin, Conn.

LEATHER COLORED ITALIAN QUEENS—$2.00; after June 1, $1.00. Tested, $2.00.
A. W. Yates,
15 Chapman St. Hartford, Conn.

GOLDEN ITALIAN queens that produce golden bees. Very gentle, good honey gatherers. State inspected. Safe arrival, satisfaction guaranteed. Untested, $1.00; six for $5.40; twelve or more, 80c each. Tested, $1.50. Select tested, $2.50.
D. T. Gaster, R. 2, Randleman, N. C.

SOME of the best queens that are raised, 75c each, $8.00 per dozen, as long as they last.
Graydon Bros.,
R. 4, Greenville, Ala.

HIGHEST grade Italian queens—Tested, $1.50; untested, 75 cents. Package bees, one pound, $1.50; two pounds, $2.50; three pounds, $3.25. Have had no disease. State inspection certificate with each shipment. Safe delivery guaranteed.
T. L. Davis, Buffalo, Leon Co., Texas.

GOLDEN THREE-BANDED and Carniolan queens. Tested, $1.00; untested, 75c each. Bees in 1-pound package, $1.50; 2 pounds, $2.50; 3 pounds, $3.25. Safe delivery guaranteed. C. B. Bankston,
Box 65, Buffalo, Leon Co., Texas.

QUEENS for the balance of the season, quality equal to the best. Write and get prices. O. P. Hendrix, West Point, Miss.

GOLDEN Italian queens, the big, bright, hustling kind (the kind that will please you). Untested, balance of season, 75 cents each. Tested, $1.25; 100, $60.00.
E. F. Day, Honoraville, Ala.

DON'T GUESS—Be sure every queen you buy will arrive safely, be purely mated and give one full year's satisfactory service or be replaced free. That's our guarantee to you. Holloway Apiaries, Marietta, Okla.

LATHAM'S "She-suits-me" three-banded untested Italian queens, $1.50 by return mail. If ordered four weeks in advance, six queens for $5.00, twelve for $10, 50 for $40, 100 for $75.
Allen Latham, Norwichtown, Conn.

FOR SALE—Choice bright Italian queens. I have been building up this strain for 25 years for hustlers, good winterers, gentleness, and fine color. Health certificate furnished. Prices: Untested queen, $1.25; dozen, $12.00. Breeder, $10.00. After September 1, $10.00 per dozen. Emil W. Gutekunst, Colden, Erie Co., N. Y.

PURE ITALIAN QUEENS—Untested, $1.00; tested, $1.50. Two-pound package, $3.00. Add price of queen wanted. Safe arrival guaranteed after May 10. Forty years' experience breeding and shipping bees and queens. Birdie M. Hartle, 924 Pleasant St., Reynoldsville, Pa.

FOR SALE—Golden Italian queens, $1.00. Bright yellow bees; splendid honey gatherers. Cap honey a beautiful white. Once a customer, always one. Queens ready to mail May 20.
J. F. Michael, R. 1, Winchester, Ind.

THRIFTY Caucasians of 14 years' selecting. Tested queen, $2.00; untested, $1.00. Safe arrival guaranteed. State inspected.
Peter Schaffhauser, Havelock, N. C.

THRIFTY Caucasian queens from daughters of imported mothers. After April 15: One, $1.50; twelve, $14.00. Safe arrival. Tillery Bros., Greenville, Ala., R. 6, U. S. A.

GOLDEN UNTESTED QUEENS—Gentle and good honey gatherers as can be found, $2.00 each. Tested, $4.00 each. Best breeders, $20.00. Over thirty years a golden Italian breeder.
J. B. Brockwell, Barnetts, Va.

FOR SALE

BEES FOR SALE—450 eight-frame colonies of bees located in Saratoga Valley, Wyoming. Health certificate. Lots of alfalfa, yellow and white sweet clover. Equipment to run for extracted and chunk honey. Poor health requires sale.
Mrs. Harvey Whitacre, Saratoga, Wyo.

MUST SELL at once 91 colonies of three-banded Italian bees, thirty in M. D. hives new this year, rest in standard hives in fine shape, and plenty of extracting supers for all. Two extractors and lots of other small equipment. Someone make me an offer. Certificate furnished.
D. F. McFarland, Holtwood, Pa.

ATTENTION, BEEKEEPERS—For sale: My entire apiary, consisting of 50 stands of bees; extractor; honey tank; a lot of supers and hives and other equipment. Reason for selling, failing health. Will sell cheap if taken soon.
Wm. Stickler, Lexington, Ill.

VERDIGRE (Nebr.) Apiary of 70 colonies and extracting equipment for sale. Guaranteed.

FOR SALE—We are constantly accumulating bee supplies, slightly shopworn; odd sized, surpluses, etc., which we desire to dispose of and on which we can quote you bargain prices. Write for complete list of our bargain material. We can save you money on items you may desire from it.
Dadant & Sons, Hamilton, Illinois.

HONEY AND BEESWAX

NEW HONEY—In 60-pound cans. White clover, 11c; buckwheat, 7c. Buckwheat comb No. 1, $3.50 per case.
F. J. Smith, Castalia, Ohio.

FOR SALE—Choice extracted white clover honey in 60-pound cans; last year's crop; 10c in small lots, 9½c in large lots. Sample 15c. E. J. Baxter, Nauvoo, Illinois.

WHITE COMB HONEY—$3.85 case.
Marsalek Apiaries, Cadams, Neb.

WHITE CLOVER COMB HONEY—New crop. Charles Guhl, R. 7, Napoleon, Ohio.

ONE CAN new honey, $6.00; two, $11.00; six, $30.00.
Delbert E. Lhommedieu, Colo, Iowa.

COMB HONEY—In case carriers. Write for prices. W. L. Ritter, Genoa, Ill.

CHOICE CLOVER HONEY—Comb and extracted. New crop. Write for prices. State quantity wanted. M. Larson & Son, Box 144, Gardner, Illinois.

HONEY WANTED—Several thousand cases white clover comb honey, size 4¼x4¼x1⅞. Must be white and strictly graded, fancy and No. 1. No other grade wanted. Also extracted. Send sample, give quantity and price wanted. We pay cash. A. L. Haenseroth, 4161 Lincoln Ave., Chicago, Ill.

NEW CROP clover extracted honey in new cans and cases, in case or ton lots. Unusually fine quality and the price is right. Price on request. Sample 20c.
Harry C. Kirk Armstrong, Iowa.

FOR SALE—Finest quality white clover honey in new 60-pound cans. Sample 15c. Martin Carsmoe, Ruthven, Iowa.

FOR SALE—Extracted and Chunk Honey. New crop very fine; 1-lb. sample for 25c. Prices on request.
F. W. Summerfield, Waterville, Ohio.

WHITE AND BUCKWHEAT honeys wanted. Write us quantities each grade, how packed and lowest price will take, stating when can ship. Also quote comb honey, stating how packed, section sizes, etc. Always ready to take in large and small lots section and comb.
Arthur H. Hoffman, Inc.,
Richmond Hill, N. Y.

NONE BETTER quality clover honey will soon be for sale. Expect 16,000 lbs. Will contract it for sale now.
M. W. Thompson, Toronto, S. Dak.

WANTED—White clover comb honey. Name your best cash price delivered.
M. V. Facey Honey Co., Preston, Minn.

NEW crop shallow frame comb honey, also section honey; nice, white stock, securely packed. Available for shipment July 15. The Colorado Honey Producers' Association, Denver, Colo.

WANTED—Car of white extracted honey.
L. D. Taylor, Chandler, Okla.

CLOVER and fall amber honey in sixties.
O. W. Taylor, Griggsville, Ill.

FANCY white clover extracted honey, any sizes. Prices and samples on request. Kalona Honey Company, Kalona, Iowa.

PARTIES wishing extra fine honey reasonable, any time, write Lee Horning, a Producer, Morrison, Ill.

HONEY (comb and extracted), pure maple syrup, maple sugar and sorghum molasses. Special price to quantity buyers. C. J. Morrison, South Bend, Ind, 1235 Lincoln Way West.

STURDEVANT, St. Paul, Nebraska. Finest quality clover honey.

WANTED—A car or less quantity of white honey in 60-lb cans. Mail sample and quote lowest cash price for same.
J. S. Bulkley, Birmingham, Mich.

FOR SALE—White clover honey in 60-lb. cans. None finer. Satisfaction guaranteed. J. F. Moore, Tiffin, Ohio.

FANCY white tupelo extracted and bulk comb, packed in five-pound tin.
J. L. Morgan, Tupelo Apiaries,
Apalachicola Fla.

HONEY FOR SALE—In 60-lb. tins. White clover at 12c lb.; white sage at 12c lb.; white orange at 14c lb.; extra L. A. sage at 11c lb.; Hoffman & Hauck, Inc.,
Ozone Park, New York.

SHALLOW frame white comb honey and white extracted honey.
The Colorado Honey Prod. Ass'n,
Denver, Colo.

EXCHANGE extractor for honey in 10-lb. pails. Ames Hatchery, Deerfield, Wis.

HONEY for sale. Comb and extracted.
H. G. Quirin, Bellevue, Ohio.

HONEY wanted. Always in the market. Any quantity, any grade; extracted or comb. We pay cash. Hoffman & Hauck, Inc., Ozone Park, N. Y.

HONEY FOR SALE—Any kind, any quantity. The John G. Paton Co.,
217 Broadway, New York.

FOR SALE—Northern white, extracted and comb honey.
M. W. Cousineau, Moorhead, Minn.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans. State quantity wanted and we will quote prices. Samples on request.
Dadant & Sons, Hamilton, Illinois.

SUPPLIES

5-GAL. CANS—Used, best condition, perfect cases. Will sell while they last, 30c per case, two cans. Arthur H. Hoffman, Inc., Richmond Hill, N. Y.

BEST QUALITY bee supplies, attractive prices, prompt shipment. Illustrated catalog on request. We buy beeswax at all times and remit promptly.
The Colorado Honey Producers' Ass'n,
Denver, Colo.

"BEEWARE" and Dadant's Wired Foundation for the Northwest. Catalog prices. F. O. B. Fromberg, Montana. Beeswax wanted. Write for prices.
B. F. Smith, Jr., Fromberg, Mont.

MISCELLANEOUS

SAVE YOUR EQUIPMENT—Send $1.00 for full directions for painting lots of things. One-fourth the cost of paint; takes less than one-fourth the time; will last a lifetime. Money back if not satisfied; three years' test. B. C. Hall, Manchester, Iowa.

WHITE LEGHORN cockerels and yearling hens. Bargains this month. Room needed for pullets. Flemish Giant rabbits also.
Chicabee Farm, Columbus, Wis.

TWENTY-ACRE farmland. Outfit for fifty colonies; fine location for commercial bee raising, one-fourth mile from main highway, store and school. Price $1500. Fred Ephardt, Lillian, Ala., Baldwin County.

THE DADANT SYSTEM IN ITALIAN—The "Dadant System of Beekeeping" is now published in Italian, 'Il Systema d'Apicoltura Dadant." Send orders to the American Bee Journal. Price $1.00.

MAKE queen introduction sure. One Safin cage by mail, 25c; 5 for $1.00.
Allen Latham, Norwichtown, Conn.

WESTERN HONEY BEE 2823 E. 4th St., Los Angeles, Calif., published by Western beekeepers, where commercial honey production is farther advanced than in any other section of the world. $1.00 per year. Send for sample copy.

BARGAIN in bee papers. Three best in U. S. "Bees and Honey" and "American Bee Journal," each one year, and "Gleanings," two years—all for only $2.50 in U. S. Order from Bees and Honey. (Sample copy free.) George W. York, Seattle, Wash.

YOU can read in either English or French the report of the Seventh International Congress of Beekeepers held at Quebec, September 1-4, 1924. Not more than a dozen copies left. Orders filled in rotation. Postpaid, $2.25. American Bee Journal.

GLEANINGS IN BEE CULTURE, published at Medina, Ohio, is the most carefully edited bee journal in the world. Its editor-in-chief is George S. Demuth. Its field editor is E. R. Root. Ask for sample copy.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

WANTED

WANT PARTNER—In the bee business. I have 170 first-class colonies now using 470 full-depth supers. Have a new location that will support 2,000 colonies. Am now moving there. This will stand investigation. Eight-frame power extracting engine and everything first-class. Give age. Experience not exactly necessary. I always hunt and trap during the winter and wish a man so inclined. J. B. Douglas, R. 2, Box 380, Tuscon, Arizona.

WANTED—A competent and reliable man to extract the honey from one hundred colonies of bees. Modern equipment. Send references and state wages expected in first letter. L. A. Kocher, C. B. M., N. R. F. Armory, Burlington, Iowa.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices charging but 5c a pound for wax rendering.
Fred W. Muth Co.
204 Walnut St., Cincinnati Ohio.

Rotary Water Pump Makes Good Honey Pump

One western outfit uses a mail order rotary water pump with great satisfaction in pumping honey. It costs only about $15.00, is of much larger capacity and does not need to be run all the time. Honey runs first into a shallow settling tank, about 18 inches deep, holding thirty cans, and thus much of the wax is not pumped into the storage tank at all, but remains in a coarse screen in the first tank.

There seems to be a feeling that it would pay to build an earth or plank driveway to the second floor and use gravity entirely.

Most pumps have too small a pipe for outlet as well as inlet. The pump runs much easier if both inlet and outlet are of 2-inch pipe, even though the pump connection is smaller,—honey friction in the pipes is much lessened. Reporter.

Our Tempermental Honey Plants

Queer things! Honey plants seem to be what, in human lives, we would call "temperamental." I've seen a hundred acres of alfalfa in full bloom and left to seed and the bees near by not whiten the combs, and five miles away alfalfa yielding beautifully.

Bradshaw, of Twin Falls district, Idaho, secured his crop of fine comb honey this year from alfalfa, as sweet clover began to yield late. Roy Rabbit, also of Idaho, and another master at producing comb honey, secured his fine crop from sweet clover, with alfalfa yielding little, though the fields were purple for a long time.

Asked why such conditions, these men refuse to hazard a guess.

It takes an expert to get a crop of honey when no one can guess which honey plant will yield the crop, and when. Reporter.

SUGGESTED SELLING PRICES HONEY—1928-29

In figuring sales to retailers deduct 20 per cent from retail price below. For jobbers, deduct an additional 10 to 15 per cent. Prices suggested are for good white grade. For amber, deduct 1 cent per pound.

	New England	Atlantic Coast	South-east	Central West	Plains	Louisiana-Texas	South-west	Inter-mountain	North-west	Cali-fornia	East Canada	West Canada
16-Ounce Jar	$ .40	$ .35	$ .30	$ .25	$ .25	$ .25	$ .25	$ .25	$ .25	$ .30	---	---
2½-Pound Can	.75	.70	.60	.60	.60	.60	.50	.50	.60	.60	---	---
5-Pound Pail	1.25	1.15	1.00	1.00	1.00	1.00	.90	.90	.90	1.00	1.00	.90
10-Pound Pail	2.25	2.25	1.80	1.90	1.80	1.75	1.75	1.75	1.75	1.75	2.00	1.75
60-Pound Can	.16	.14	.14	.14	.12½	.12	.12	.12	.11	.12	.13	.13
10-60-Pound Can	.13	.12	.12	.12	.11	.10	.09	.10	.10	.10	.12	.12
Carlot, 2-60	---	.10	.09	.10	.09	.08	.08	.08	.09	.08½	---	---
Barrels	---	---	.09	.09	---	.08	---	---	---	---	---	---
2½-Pound Bulk Comb	.65	.65	.60	---	---	.70	---	---	---	---	---	---
5-Pound Bulk Comb	1.40	1.40	1.10	---	---	1.25	1.10	---	---	---	---	---
10-Pound Bulk Comb	2.75	2.75	2.25	---	---	2.25	2.10	---	---	---	---	---
Comb, Single Section	.40	.35	.30	.30	.30	---	---	.25	.25	---	---	---
Comb, Fancy, Case	7.00	6.50	5.50	5.50	5.00	---	---	5.50	5.50	---	---	---
Comb, No. 1, Case	6.00	6.00	5.25	5.00	4.50	---	---	5.00	5.00	---	---	---
Comb, Choice, Case	5.50	5.75	4.75	4.75	4.00	---	---	4.50	4.50	---	---	---
Comb, Fancy, Carlot	---	---	---	---	---	---	4.50	5.00	5.00	---	---	---
Comb, No. 1, Carlot	---	---	---	---	---	---	4.20	4.50	4.25	---	---	---
Comb, Choice, Carlot	---	---	---	---	---	---	3.90	3.75	3.75	---	---	---

50c ea. SEPTEMBER 50c ea.
QUEENS

Bright three banded Italians. For the remainder of the season, 50c each or 12 for $5.00. Pure mating, safe arrival and perfect satisfaction guaranteed.

THE CROWVILLE APIARIES

J. J. SCOTT, Prop. Crowville, La.

GOLDEN QUEENS

Yes, and none better. Can fill orders promptly until November 31st. Single queens $1.00; 2 to 9, 80c; 10 to 19, 70c: 20 and over 65c. Tested queens $1.50 each.

M. STEVENSON, Westwego, La.

THE HONEYBEE

Written originally by L. L. Langstroth, rewritten by Charles Dadant and C. P. Dadant, is now in its twenty-second edition. Successful beekeepers use this book as an aid in their daily problems. The teachings of Langstroth and the experiences of the Dadants compiled in this book make it a volume of constant reference.

Price $2.50

American Bee Journal
Hamilton, Illinois

RED STICK
PURE ITALIAN
QUEENS
50c
ANY NUMBER

Time has told — that legend old:
"When queens and bees are better than these
RED STICKS will lead in bettering the breed."
We mean this more and more each year.

With our low price and the heavy producing record of our queens, everyone can requeen each colony every year. This means more honey and safe wintering

We will operate more than 1,000 standard three-frame mating nuclei for the balance of this season.

Clipped free on request. State health certificate sent with each order. 100% satisfaction and pure matings guaranteed. Last year our pure matings were better than 98%. Get our circular and learn why our queens hold the front rank.

RED STICK APIARIES
BATON ROUGE, LOUISIANA

Save Time -- Save Worry

Dadant's Wired Foundation

Can be nailed into Lewis Slotted Bottom Bar in a jiffy. And such wonderful combs!

Sold by all Dealers in Lewis Beeware and Dadant's Foundation

Putting the "Ayes" Into Organize

By Natt N. Dodge

A STUDY of beekeeping history reveals that ever since the invention of the more modern appliances which have brought honey production into its present important position among the branches of agriculture, beekeepers have made many more or less successful attempts to organize. To those of us who read of these various organizations and of their part in the building up of the industry it is evident that their efforts were turned toward bringing beekeepers together for the purpose of social recreation combined with the exchange of ideas and reports of experiences with a view to working out some of the many problems of honey production.

Today we still find beekeepers organized into local groups throughout the country. These organizations, as a rule, are but loosely held together, have an ever changing personnel, and carry on, in the main, the social and educational functions of the earlier societies. One or two of the larger organizations, however, exist for the purpose of lowering costs of production of their members through the quantity purchasing of supplies and bringing increased returns from the sale of honey by eliminating one or more of the middlemen from the marketing field.

The time is rapidly approaching when honey production, as an industry, will be forced to adopt modern merchandizing methods. The transition from present day practices may come about in one of two ways. The present tendency points to the natural economic course whereby the pinch of killing competition forces out the less efficient of the producers, the more fit surviving to organize a few large honey companies, each controlling many apiaries scattered over the nectar-producing sections of the territory it occupies. The other possibility lies in the majority of beekeepers awakening to the danger and, before it is too late, organizing one, or several, producers' marketing associations which can control the industry and take upon themselves the grading, advertising, distributing, and selling of the nation's honey crop.

There are many serious problems to be worked out in the formation of a practical producers' marketing organization. Not least among these is the initial one of arousing the beekeepers themselves to a realization of the imminent danger. In the field of honey production there are many beekeepers who rely upon their bees for only a part of their livelihood and to whom even a sale price below production costs does not bring to mind visions of the open gate to the poorhouse. So large is this class of "sideliners," and so much honey do they control, that it is essential that they be enlisted in any effort to organize. Since they are not dependent upon the returns from their honey crops, it is very difficult to impress them to such an extent that they will sincerely join forces with the commercial bee men who are grimly in earnest. Then again, there is the problem of "ways and means" upon which so many cooperative organizations have been wrecked. Once the organization is effected, and work started, someone does not like the way it is being done, another objects to the prices set, a third thinks that he is being discriminated against, and soon there are four or five factions, all pulling in different directions, with the result that no progress is made. These and other problems must be met and conquered if the producers are to solve their marketing problem.

The formation and successful functioning of any organization depends upon two things: first, the wholehearted faith and support of every individual concerned, and, second, the presence of a strong, resourceful leader in whose personality and ability all of the individuals have implicit reliance. The success of the Revolutionary War was due to the singleness of mind and purpose of the colonists coupled with their faith in the resourcefulness and ingenuity of General Washington. Fundamentally the situation today is similar, but it is more cumbersome and there are more factors involved. Through all of the years of beekeeping practice there has been no single leader, unless it be the late Dr. C. C. Miller, whose personality and executive abilities could enlist and hold the active support of a nation of beekeepers. It is certain that no such leader exists today.

To the writer's mind there is but one possible practical method of organizing the beekeepers of the nation for the formation of a successful honey marketing organization. There is only one starting point available. only one source of leadership, only one method of creating a nation-wide unity of purpose and action. In getting anything done in the beekeeping industry it has always been a case of "let George do it." There is only one "George." George is the combined bee magazines of the United States.

In each of the beekeeping divisions of our country there is a beekeepers' periodical to which the bee men of the territory 'round about look for

news of the beekeeping world, for hope, and for guidance. The opinions of the various editors carry with them much weight. The beekeepers' confidence in them is, in the main, justified, for the editors of our various bee journals are, almost without exception, practical honey producers of long experience in the field of beekeeping, and well versed in its many intricate problems. Here, then, is a nucleus of leadership. Suppose that these several editors, being awake to the necessity for action, should agree among themselves that the life of beekeeping demanded immediate action. They realize that the beekeepers' danger is theirs also, for should the industry be centralized in a few large companies, and the hordes of small producers dwindle gradually away, who would there be left to subscribe to the several bee papers laboriously built up through so many years of endeavor? Suppose, then, that these editors should come together in conference, and through their experience and wisdom should devise and agree upon a plan for the formation of a marketing organization composed of honey producers. This group of leaders, then, with a single belief and a single plan, would be welded into one unit in which the confidence of every beekeeper in the United States would be firmly entrenched. With this center of operations established, a carefully planned program of editorials appearing simultaneously in every bee periodical, and thus reaching every up-to-date beekeeper in the country, would awaken even the "sideliners" to the pressing dangers and the necessity for united and immediate action, if anything within the beekeeping field could do so.

Is there any other possible way of putting the honey producers on their feet as an organization? Is there any other way to arouse all of the beekeepers to the critical need for action? Is there any other way to place in the field expert leadership carrying the confidence of a nation of bee men? Is there any other group capable of "starting the ball rolling" by molding opinion until it crystallizes into united action? Is there any other method of centralizing thought and knitting together divergent views into a more potential nucleus? The writer can conceive of none.

But it cannot rest there. If the machine is once started, its momentum should carry it forward. With a plan worked out and agreed upon by a unit composed of the editors of the various bee periodicals, and publicity given to this plan through the united efforts of these periodicals cooperating, it should not be difficult to put the plan into working order. If any group of leaders in beedom today can devise a feasible plan for organizing beekeepers into a marketing association, it is just such a group, and none other.

Can the beekeepers of the United States be organized? That is the big question. The writer offers this as a suggestion for bringing such an organization about. Beekeepers, you are the ones to decide—you have read the foregoing—now think it over—and every one in favor raise your right hand and say "Aye," and say it loud enough so that the editor of each and every beekeeping periodical in the United States can hear you. Washington.

About the Hive on the August Cover

As stated in the usual description of the August cover, the picture was sent to us by D. M. Cuthbertson, Brighton, England. He writes that the hive shown is a double one, with a switch on the floor board by which bees may be directed to either one side or the other for controlling swarming. The hive was originated by an American.

He writes: "I made the hives on the British W. B. C. principle with inner and outer cases, and found the switch-over plan quite a success. Whether it would be profitable on a commercial scale is another matter."

Conditions in Michigan Peninsula

A letter from Thomas J. Davis, at Rudyard, in the land of hay and clover, reports good wintering in Upper Peninsula cellars. Davis put 298 colonies in a new cellar in November and took them out on the twenty-second of April, after a confinement of 162 days. Only a few colonies were lost, most of them from late divides of the previous year.

"Our Carniolan bees seem to have used less food and to have come out of the cellar stronger than the Italians, and we are well pleased with them in every way."

Illinois Beekeepers' Report for 1927

This is a 127-page, cloth-bound book, with numerous illustrations, compiled by V. G. Milum, secretary of the Illinois State Beekeepers' Association, who, as our readers know, is also in charge of the beekeeping activities at the University of Illinois. In addition to the minutes of the various local associations and of the State Association, with reports of secretaries and treasurers, it contains interesting articles which make it an unusually valuable state report.

SUNNY LAND ITALIAN QUEENS

50c EACH, Any Number

Requeening time is now on. Our Queens meet your needs Vigorous, beautiful and gentle. Disease resisting and hardy enough for the Northern climate.

During the Summer and Fall months we expect to ship 5000 Untested Queens. With this capacity, priced as we are offering them our Queens will head many colonies that make a fine crop of honey for 1929 Your patronage solicited. We guarantee to please you perfectly or refund your money.

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Reared second door from the postoffice. Save three days' confinement by R. F. D. and hot mail sacks from southern route. Queens selected, guaranteed to be purely mated. April and May, $1.25 each, $13.00 for twelve. After June 1, $1.00 each; 24 at 95c, 50 at 90c, 100 at 85c each. Select tested, $2.00. Breeders, $5.00 up; virgins, 50c. See list. No disease. Safe delivery and satisfaction guaranteed.

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After June 15, Select Untested—

4 or less	$1.00 each
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11 to 20	.85 each
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51 to 100	.75 each
Tested	1.50 each

Queens sent in introducing cages. Write for Booklet giving principle of queen introduction.

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SEPTEMBER

Is here and much requeening remains to be done. We can give you 24 hour service with the finest of Italian queens. HOLLOPETER'S queens are unlike any other, good looking and good workers too. You will like this combination. Most of our dollar queens would make breeders.

Untested Queens, each, $1.00; 5, $4.50; 10, $8.50; 20, $15.00; 50 to 100, 70c each. Tested, $1.50 each.

J. B. HOLLOPETER
Rockton, Pa., L. B. 80

Mack's Queens
3 BAND ITALIANS

Are Extra Hardy.
They are northern bred.

Are Extremely Prolific.
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And They Produce Such Nice Big Yellow Ambitious Bees.
OUR PRIDE. Your desire.

Just talk to any one of MACK'S many customers and see what they tell you about them. If our queens, prices and service don't satisfy you it's hardly worth while for any one else to try it. We are after satisfied customers and it takes GOOD QUEENS to win and hold them. If they satisfy us we know they will satisfy you.

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Herman McConnell
(The Bee and Honey Man)
Robinson Route 2 Illinois
Telephone and Telegraph Oblong, Ill.

A Reliability Study of Kelty's Method for Differential Diagnosis of Brood Diseases

By Ray Hutson, Assistant Entomologist, New Jersey Agricultural Experiment Stations, and Elmer G. Carr, Deputy to the State Entomologist in Bee Inspection, New Jersey Department of Agriculture.

THE differentiation of American foulbrood in its early stages is an admittedly essential step in its economic control. The characteristics of the disease are, however, approximated or obscured at times by those of a less harmful disease. European foulbrood (Sturtevant, A. P., Journal Ec. Ent., April, 1925). The technique for microscopic diagnosis described by R. H. Kelty (American Bee Journal, November, 1926) seems to fulfill a long felt want for a simplified procedure which is readily applied. The following test was carried out by the writers to ascertain the reliability of the method.

During their usual work each of the workers carried a slide box filled with clean slides. Every time the opportunity presented itself, smears from larvæ showing the typical gross symptoms of American and European foulbrood were made. The slides were numbered and the gross diagnosis recorded. At the end of the season the slide collections were exchanged, each of the authors retaining his own record of the gross diagnosis. This gave to each a series of numbered slides having unknown smears upon them.

The slides were examined by Kelty's procedure, which is, briefly: Macerate a small portion of the suspected larvæ with 1 per cent hydrochloric acid and make a thin smear upon a clean slide. Warm the smear over a gentle flame until thoroughly dry. The next step is to flood the smear with fresh carbolfuchsin and warm gently until bubbles begin to arise. The smear must be covered at all times, else the slide is liable to be unsatisfactory. After staining, the slide is washed under a tap and the smear covered with a cover glass. The final step is examination under the oil immersion lens of a compound microscope.

The microscopic pictures presented by the smears are conclusive, because, as White has shown (U. S. D. A. Bulletin 809, page 37) in connection with water mounts, "a very large number of spores free from rods, with no other bacterial species present, is the characteristic microscopic picture of the disease" (American foulbrood). Further, the spores of American foulbrood are not impregnated by the stain, although some of the stain is at times deposited on the surface, giving the spores the appearance, under the microscope, of being thinly framed in red. These two facts make it easy to recognize American foulbrood in all cases, except the occasional one containing the vegetative stage of Bacillus larvæ. The presence of rods of B. larvæ makes diagnosis harder. The available evidence indicates little danger of confusing the vegetative form of B. larvæ with that of Bacillus alvei, as a careful examination will usually disclose spores in the latter case. Cases of this kind can usually be determined by consulting pure culture slides of the two organisms or U. S. D. A. Bulletins 809 and 810.

As the slides were examined a record was made of the findings. Finally the records of the examiner were compared to the gross diagnosis made by the collector. The microscopic findings in the 312 smears examined in the test coincided in every case with the gross diagnosis previously made. There were 187 slides showing European foulbrood and 125 showing American.

The Kelty method, from these tests, would appear to be 100 per cent efficient in the differential diagnosis of American foulbrood. While it is possible to demonstrate the spores of American foulbrood in an unstained water mount (U. S. D. A. Bulletin 671, page 10), the writers feel that the added definition afforded, together with the non-staining character of B. larvæ spores, render the Kelty method superior. It seems, however, that a thorough study of the figures in U. S. D. A. Bulletins 809 and 810 are essential to its intelligent application.

The Langstroth-Dadant Book Translations

In our July number, page 345, the portrait of Mr. V. Raykovsky was published with the statement that he is the translator of the book. This statement, written by a collaborator, during the illness of the editor, is incorrect.

The "Hive and Honey Bee," or as we call it now, "The Honey Bee," has had five editions in Russian, and the present one, by Raykovsky, is only a revision from the latest revised editions in English. The original translation of the book was by G. Kandratieff, in 1892. This gentleman died in 1906. His translation was from the first French edition and was made almost as soon as the French edition appeared.

There is also an Italian translation of this book, "L'Ape E L'Arnia" by D. Angeleri, in Turin, 1928.

Sweet Clover in Illinois

Sweet clover finds a place in most Illinois publications on bees because of the rapidity with which this legume is being established on the farms of the state. J. J. Pieper, assistant professor in crop production at the University of Illinois, writes, under the title "Clover an Old Weed Which Is Now a Wonder Crop," concerning its history and value on the farm.

In speaking of its spread, he says: "Sweet clover is grown all over the world. Every state in the Union grows sweet clover. To be sure, the limestone regions have the largest acreages; Alabama, Mississippi and Kentucky grow considerable sweet clover. All states west of the Mississippi River, and especially those in the North, have qualified as sweet clover states. The Southwest and the Atlantic Coast regions have a limited amount of this crop.

"Illinois grows more sweet clover than any of the north central states. The northern part of the state seems to be very well adapted to this comparatively new legume without further treatment. It is not to be assumed that central and southern Illinois do not grow the great soil builder. One cannot think of soil improvement in southern Illinois without thinking of sweet clover. Limestone and sweet clover make a team which has pulled many a farmer out of the rut of an abandoned farm."

There is much practical advice on the growing, seeding and development of sweet clover in this article. Inquiry concerning the report can be made of Mr. Milum at the University of Illinois.

A Better Race of Bees?

The lead article, "A Better Race of Bees?" in the 1927 Ill. Annual Report, is by Professor F. B. Paddock, of the Iowa State College at Ames. It brings up the question as to whether the Italian bee is, after all, the best bee for all conditions, in as large a country as the United States.

It is interesting to note that some beekeepers in the West, particularly Colorado, have found Caucasian bees better suited to the cool weather prevailing in the mountain sections than the Italians. This may be because of the influence of Herman Rauchfuss, at Englewood, who has always been a champion of the Caucasian race.

In Wisconsin there are several beekeepers who have adopted the Caucasians and prefer them to Italians. Many beekeepers have tried them, on the other hand, to give them up in disgust because of their habit of building brace combs and propolis to excess and because of the great difficulty in finding the queens.

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Tested queens $1.00 each, as long as they last.

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CANEY VALLEY APIARIES, Bay City, Texas

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MOST CAREFUL BREEDING

Prices for remainder of this season: 1 to 9 inclusive, $1.25 each; 10 to 24 inclusive, $1.20 each; 25 to 49 inclusive, $1.15 each; 50 to 99 inclusive, $1.10 each; 100 or more, $1.00 each. Breeding queens, our very best, service guaranteed for 1928 and 1929, $10.00 each.

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10-pound pails 50 in carton	$9.50	$46.00	$88.25	$8.00	$39.25	$76.75
			10 boxes	10 boxes	50 boxes	100 boxes
2½-pound cans 24 in wood box			$10.00	$9.50	$45.00	
5-pound pails 12 in wood box			$10.50	$9.00	$44.00	
10-pound pails 6 in wood box			$8.00	$7.00	$32.50	
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A City Ordinance Again

Through correspondence with Mr. W. W. Remington, the active president of the North Dakota Beekeepers' Association, and clippings from the Moorhead, Minnesota, News, we learn that the city of Moorhead recently placed before its council an ordinance against the keeping of bees within certain limits in the city.

The ordinance was finally tabled and its menace removed. There are precedents enough against the tenancy of such an ordinance, I believe, to prevent any community passing one successfully. The ordinance is foolish, of course.

The activity of Mr. Remington and his testimony before the council is largely responsible for the defeat of this measure, and he gave quite a full statement of the facts concerning the keeping of bees within city limits. They are fairly well put. We quote from them as follows:

"It is beyond the power of any municipality to declare by ordinance any industry to be a nuisance in itself, unless such industry is in fact a nuisance at all times and places within the area described.

"The fact of a nuisance must be determined by judicial proceeding, relief being provided by the authority of the court when the fact has been established. This relief is available to any aggrieved party, now, under existing law. Judicial proceeding would still be necessary for relief even if the city council should attempt by enactment an ordinance to declare the keeping of bees a nuisance.

"No publication of the proposed ordinance could restrain bees whose homes are outside the proposed limits from flying over or into the restricted area, or from crossing the state boundary. Bees in search of water, or of nectar, or of pollen, fly much greater distances than the longest straight line that can be drawn within the proposed limits.

"In view of the foregoing, the proposed ordinance is unnecessary, would afford no relief not now available, and in a practical way would be useless."

Mr. Remington, however, does not leave the beekeeper without responsibilities in the case, which we are glad to see. He says: "Defeat of the proposed ordinance cannot be held to excuse negligence, or to relieve the beekeeper from responsibilities therefor.

"There may be some degree of contributory negligence in permitting faucets to leak, in "bottling" bees, in exposing sweets and in flailing the air with arms and hats when a bee becomes inquisitive, but there is no doubt about the responsibility of the beekeeper who, by bad handling or neglect, precipitates 'wholesale robbing' with attendant stinging of persons and animals. There may be penalty or damages or both for such cases.

"Negligence may consist in the selection of open sites, lacking shrubbery, trees, or high screens; of sites too near to drives, walks or dwellings, or in failure to provide water in a suitable way on the day of the first flight in spring and throughout the season thereafter.

"The minor inconveniences attendant upon spring flight occur only upon one day in the year, as a rule, and can be entirely removed or made negligible by friendly warning from the beekeeper and very little neighborly cooperation. Here fall the 'spotting' of laundry and the drinking from wet clothing or laundry.

"There is no excuse for the beekeeper failing to inform himself and his neighbors of anything that will prevent the discomfort and annoyance that may come from bees. Most of those engaged in the work recognize this fact and make use of an abundant literature and of professional association and advice for the purpose. Lack of thought, unreasoning fear and superstition are obstacles difficult to surmount, but much may be done by a little well-directed effort."

Golden Northern Bred Queens

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We have been breeding Carniolans for the past 21 years. Several breeders imported each year—Jan Strgar and M. Ambrozic stock. We have supplied Carniolans to many agricultural colleges and experiment stations and to the Canadian and Japanese governments for breeding purposes. We probably have the finest Carniolans in the United States. Ask for our free paper, "MERITS OF THE CARNIOLAN BEE."

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Untested queen, one	$1.25
Untested queens, six	6.60
Untested queens, dozen	12.00
Tested queens	2.00

Lower prices in larger quantities. Queens reared here in September during the aster flow are the very finest. September is a good time to put in some Carniolans, much better than the spring months.

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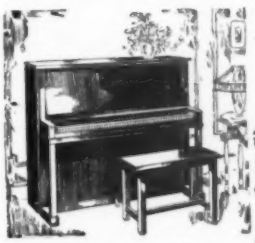

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As In the Past—

Pails and cans of heavy tin plate.
Hazel-Atlas glass jars.
Low priced comb honey cases.
Counter display cases.
Extracting equipment.

Write for new illustrated price list.

The A. I. Root Co. of Iowa
Council Bluffs, Iowa

BARGAINS

Quality Honey Containers

5 lb. Pails
10 lb. Pails
60 lb. Square Cans
Glass Ware
Comb Honey Shipping Cases

Write for our 1928 Price Sheet

LEAHY MANUFACTURING COMPANY

HIGGINSVILLE, MISSOURI

Thrifty Queens

50c each

In Lots of 10 or more

Smaller Lots 60c each

Safe arrival is guaranteed in the U. S., Canada and Cuba. Pure mating and satisfaction guaranteed the world over.

Over a third of a century of careful breeding and selecting insures you of THRIFTY three banded Italian queens that please. An output of thousands of queens per month assures you of good delivery.

W. J. FOREHAND & SONS

Fort Deposit, Alabama

Remember, THRIFTY bees are guaranteed to please

Better Late Than Never

Queens introduced early in September have time to get in some good licks before winter. Be sure to have every colony headed with a young prolific queen of a known honey gathering strain. ROOT-QUALITY three-banded Italian queens will please you.

Queen Prices:

	1	10	50	100
Untested	$1.10 ea.	$1.00 ea.	85c ea.	75c ea.
Tested	2.25 ea.	2.00 ea.		
Sel. Tested	5.00 ea.			

Note: Untested queens are young laying queens of this season's rearing

Our new mailing and introducing cage helps to make queen introduction more safe and sure.

The A. I. Root Co.

Westside Station
Medina, Ohio

Root QUALITY BEE SUPPLIES

GET OUR PRICES

Before Buying Beekeepers' Supplies

For your convenience we have included a coupon with this ad. Use it or write us a letter.

Our Guarantee

All goods purchased may be returned if unsatisfactory and money cheerfully refunded. No questions asked.

Our Service

While we ship all over the country, we can give special service to those located in the East—New York, Pennsylvania, New England, and Atlantic Seaboard states.

W. T. FALCONER MFG. COMPANY

FALCONER, N. Y.

W. T. Falconer Mfg. Co., Falconer, N. Y.
Gentlemen:
Without obligation on my part, please quote prices. I have _____ swarms.
_____ Hives _____ Sections
_____ Supers _____ Br. Fdn.
_____ Frames _____ Super Fdn.
_____ Bodies _____
Name _____
Town _____ State _____
Address _____

Display it . . . *Canco style*

IF you had the best honey in the world—and nobody knew about it—you wouldn't sell any.

The best way to get people to know about your honey is to package it attractively.

Canco honey containers are brightly decorated. They give off a brilliance that is bound to catch the eye—and sell. With Canco packages your repeat sales should be good too—for your name is prominently displayed.

Write to the nearest Canco office or one of the distributors listed for further information.

Brilliant in red, green and gold—Canco packages help your new and repeat business. Three sizes—2½ lb. cans, 5 and 10 lb. pails.

Canadian Canco honey containers are now available f.o.b. Brandon and Winnipeg. Apply to Hamilton for quotations.

Canco honey containers are distributed by

Dadant & Sons
Hamilton, Ill.

Fargo Seed House
Fargo, N. D.

W. R. Perry Company
Omaha, Nebraska

G. B. Lewis Company
Watertown, Wis.

10 Tivoli St., Albany, N. Y.
1304 Main St., Lynchburg, Va.
1921 E. 4th St., Sioux City, Ia.
318E.BroadSt.,Texarkana,Ark.

Standard Lumber Co.
Winona, Minn.

Superior Honey Co.
Ogden, Utah

AMERICAN CAN COMPANY

CONTAINERS OF TIN PLATE - BLACK IRON - GALVANIZED IRON - FIBRE

METAL SIGNS AND CANCO DISPLAY FIXTURES

New York Chicago San Francisco Hamilton, Ont.

4 HORIZONTAL WIRES

ARE ABSOLUTELY NECESSARY TO KEEP THE CENTER OF YOUR BROOD COMBS STRAIGHT

NOTE THE DIFFERENCE IN THE LOCATION OF THE MID-RIB AND THE DEPTH OF THE CELLS IN THE TWO COMBS.
WIRED HORIZONTALLY
NOT WIRED HORIZONTALLY
Root's Comb Tester
Place this edge along or parallel with top bar
Place directly over your comb Cells that are the same size as pattern above are worker brood cells Watch for stretched cells (storage cells which may in time become drone cells)
THREE-PLY FOUNDATION PREVENTS STRETCHING
Root's Cell-Measuring Gauge
One of which is attached below
Worker cells average one half inch deep or the red portion of the guage.
Deep cells—no brood
Shallow cells—no brood
Measure Your Cells
Four tight horizontal wires keep the center or midrib of the comb straight, insuring cells of uniform depth.
USE THREE-PLY AIRCO FOUNDATION
Reinforced with four tight horizontal wires

Here Is a Simple Way To Test Your Brood Combs

Insert the Root comb measuring rod into the cells of your brood comb. If the top of the red comes even with the top of the cells of the brood comb, it shows that the cells are of worker-cell depth, and the mid-rib is in the center of the comb.

The location of the mid-rib is of greatest importance. It must be in the center, and can be held there only by four tight horizontal wires. Deep cells cannot be used for brood, but only for storage of honey. The same is true of shallow cells.

You can find out if you have good brood combs by sending for Root's comb tester.

Free To Every Beekeeper
Root's Comb Tester

(Be sure to give the number of colonies you operate)

Root QUALITY BEE SUPPLIES

THE A. I. ROOT COMPANY

Box A-3

MEDINA, OHIO

Root QUALITY BEE SUPPLIES

Three-ply foundation prevents stretching of the cells. Four horizontal wires prevent warping.

Good brood combs with the mid-rib in the center can be had by using **Three-ply Airco Foundation, in** frames having four right horizontal wires threaded through the end bars. (We still have a few of the fifty-cent wiring outfits. Send for yours.)